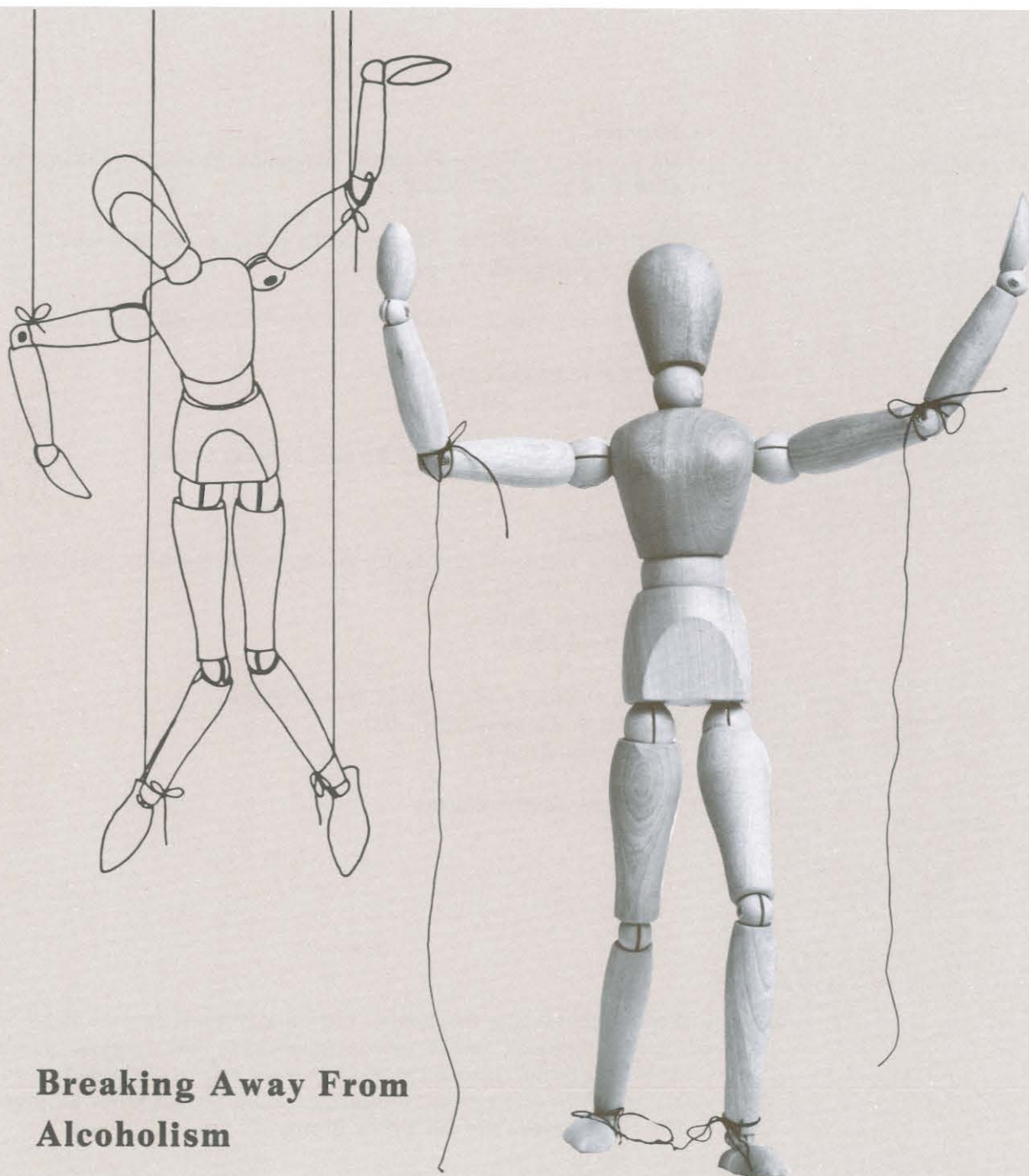


U.S. NAVY MEDICINE

May 1981



**Breaking Away From
Alcoholism**

Surgeon General of the Navy
VADM J. William Cox, MC, USN

Deputy Surgeon General
RADM H.A. Sparks, MC, USN

Public Affairs Officer
LCDR Patricia M. Pallas, USN

Editor
Jan Kenneth Herman

Assistant Editor
Virginia M. Novinski

Editorial Assistant
Nancy R. Keesee

Contributing Editors

Contributing Editor-in-Chief: CAPT E.L. Taylor (MC); *Dental Corps:* CAPT P.T. McDavid (DC); *Preventive Medicine:* CAPT R.L. Marlor (MC); *Health Care Programs:* CAPT D.F. Hoeffler (MC); *Family Advocacy:* LT S.R. Doucette, Jr. (MSC); *Psychiatry:* CAPT N.S. Howard (MC); *Master Chief Petty Officer of the Force:* HMCM S.W. Brown (USN); *Special Projects:* HMCM C.A. Crocker (USN)

POLICY: *U.S. Navy Medicine* is an official publication of the Navy Medical Department published by the Bureau of Medicine and Surgery. It disseminates to Navy Medical Department personnel official and professional information relative to medicine, dentistry, and the allied health sciences. Opinions expressed are those of the authors and do not necessarily represent the official position of the Department of the Navy, the Bureau of Medicine and Surgery, or any other governmental department or agency. Trade names are used for identification only and do not represent an endorsement by the Department of the Navy or the Bureau of Medicine and Surgery. Although *U.S. Navy Medicine* may cite or extract from directives, official authority for action should be obtained from the cited reference.

DISTRIBUTION: *U.S. Navy Medicine* is distributed to active-duty Medical Department personnel via the Standard Navy Distribution List. The following distribution is authorized: one copy for each Medical, Dental, Medical Service, and Nurse Corps Officer; one copy for each 10 enlisted Medical Department members. Requests to increase or decrease the number of allotted copies should be forwarded to *U.S. Navy Medicine* via the local command.

CORRESPONDENCE: All correspondence should be addressed to: Editor, *U.S. Navy Medicine*, Department of the Navy, Bureau of Medicine and Surgery (MED 001D), Washington, DC 20372. Telephone: (Area Code 202) 254-4253, 254-4316; Autovon 294-4253, 294-4316. Contributions from the field are welcome and will be published as space permits, subject to editing and possible abridgment.

The issuance of this publication is approved in accordance with Department of the Navy Publications and Printing Regulations (NAVEXOS P-35).

NAVMED P-5088

U.S. NAVY MEDICINE

Vol. 72, No. 5
May 1981

1 Features

On Growing Children—Recurrent Abdominal Pain of Psychologic Origin
CDR E. Breger, MC, USNR

3 Soviet Naval Medicine: Aviation Medical Support (Conclusion)
CAPT R.P. Caudill, Jr., MC, USN

10 MSC Survey Results: Attitudes Toward Professional Specialization (Part Four)
LCDR P.T. Bruder, MSC, USN
LT M.C. Butler, MSC, USN

14 Tri-SARF: A Unique Facility Returns Patients to Duty
J.K. Herman

23 Professional

A Simple Technique for Measurements of Percent Body Fat in Man
LCOL H.F. Wright, USMCR
C.O. Dotson, Ph.D.
P.O. Davis, Ph.D.

28 To sBe Or Not To sBe (That is the Question!)
CAPT R.E. Alexander, DC, USN
G.W. Dennish, MD

33 Notes and Announcements

COVER: Alcoholism is the number one drug of abuse in the United States affecting between 12 and 15 million Americans. How a unique tri-service rehabilitation facility handles the problem is the subject of this month's cover story on page 14. Cover art and design by Juanita Adams. Cover photography by HM2 Kevin Kaya and HN Bobby Brown.

Recurrent Abdominal Pain of Psychologic Origin

CDR Eli Breger, MC, USNR

"An hour of pain is as long as a day of pleasure." English Proverb

Every parent and physician is familiar with the "stomach ache" of which children sometimes complain as part of a generalized infection or emotional stress. Children may also use it as a manipulative device to avoid an unpleasant task or for no apparent reason. Studies in pediatric outpatient departments reveal that approximately 10 percent of children presenting themselves do so because of abdominal discomfort. In only five to ten percent can a substantial physical basis be found to account for the problem.

There is a smaller but significant group of children who complain recurrently and persistently of severe abdominal pain. However, no tangible disorder is revealed upon repeated and extensive physical evaluations. One can sense from this that the symptom may represent the final focus of many and diverse psychological issues within the growing child. These children are of deep concern because they suffer severely and their lives and happiness are markedly impaired. We refer to their condi-

tion as recurrent abdominal pain of psychological origin.

If untreated, the symptom has a rather poor outcome. Long-term followup studies of untreated children reveal that one-third persist with similar symptoms, another third undergo symptoms replacement such that they now have pain in other parts of the body, and only about a third are symptom-free. These recurrently complaining children present themselves in late childhood or early adolescence, although quite frequently they had complained of similar symptoms earlier that were invariably of brief and mild intensity. It is as if their earlier experiences were stored in their memories to reappear as more complex psychosomatic responses when they developed stressful life problems. Their level of intellect and neurologic development must also reach a point to make this response possible. In almost all psychological presentations, boys outnumber girls. Interestingly, and in contrast, girls complaining of this condition appear far more frequently than boys. The reason for this is uncertain. It may be because boys are able to discharge aggressive feelings more adequately in play and so are less burdened by these emotions.

Presenting Features

The clinical features of the condition vary from child to child as we seem to be dealing with a common

endpoint to several conditions. Most often, the child had shown relatively frequent stomach aches over a number of years with periods of symptom-free functioning lasting from months to a year. Usually the pain is moderate, vague as to description, and localized around the navel area. Description of the pain is most often detailed by the mother rather than the child showing very deep identification between the two with an overprotective and highly anxious mother and an overly dependent child. The pain is rare during sleep. Physical examination and workup are usually negative and, in spite of the pain, there does not appear to be much abdominal tenderness or bloating. Quite frequently, the symptom is associated with nausea, vomiting, headache, and pallor, but the abdominal pain remains the central complaint. At times, the onset is related to an obvious environmental stress but this is the exception rather than the rule. It is rarely difficult to come up with some stressful life situation occurring around the onset of a physical symptom, but it is harder to prove it is the cause. Most often, the onset is related in a general way to unconscious psychologic issues involving anxiety, anger, or guilt. These emotions are held in check by the child's burdened defense system until an imbalancing takes place. Only a very thorough and detailed study of the child and the

Dr. Breger is Chief of the Psychiatry Service at the Naval Hospital, Beaufort, SC 29902. Copyright 1981 Eli Breger, M.D. All rights reserved. May be reprinted or reproduced within the Navy for nonprofit educational purposes in keeping with the fair use doctrine.

environment allows us to understand what has been taking place and why the difficulty has occurred.

Parents of these children usually are illness oriented. In their search for a physical cause they will accept almost any explanation offered. With such a pronouncement by a physician, even when the supposed cause is of serious consequence, there is often a relief in symptomatology. It is as if such families thrive on crises and suffering and anxiety decreases once they have something tangible on which to concentrate. It is regretful that such children undergo repeated medical workups and are prone to multiple surgical procedures recommended by physicians confused by the clinical picture and eager to avoid overlooking a concealed abdominal condition. Often, appendicitis is suspected and when appendices are removed they invariably turn out to be free of disease. However, a temporary improvement in the child's suffering takes place making the family and physician believe they found the basis of the problem. However, in a matter of months or a year the condition returns.

Child's Personality

The personalities of such children tend to be rather characteristic. They appear to be older than their years, neat, orderly, bright, and conforming. Parents refer to them as "my best child." This personality profile is typical of most individuals with psychosomatic conditions. It reflects great restraint over the expression of negative emotions and feelings with a deep subtle reservoir of fearfulness. The parents tend to be responsible and sensitive individuals with high expectations for themselves and their children. They obviously are chronically worried and share with the doctor anxieties not only about the child but about other issues within the family, past and present. Often there is a history of some major stress within the family having taken place during the child's early development.

The raising of this particular youngster then becomes imbued with a great deal of anxiety which is transmitted to the child. A lack of confidence in the youngster's ability to develop normally and naturally emerges and there is strict parental surveillance and involvement on every level. The child remains dependent and learns to suppress conflictual feelings, expressions of which are so necessary for growth and competence. In time the child, although a model of conformity, is also perceived as being less capable, weak, and sensitive. This intensifies the parents' view that their careful protection has been justified.

Family History

Frequently, a parent or close relative has or did have similar symptoms. This individual generally is pain-prone and illness-oriented and offers himself as a model for identification to the child. Guilt can play an important part in such relationships. As these children do not live well with their conflictual feelings, they may feel guilt because of their natural ambivalent feelings toward their parents. To allay this guilt they identify with the suffering symptoms of their parents and both complain of recurrent abdominal pain.

Most of these children are disturbed on deep levels as described above, but occasionally a more superficial cause can be found. A child may by chance learn that such discomfort makes him the recipient of much attention and diverts it away from other problems such as parental arguments and threat of separation. On an even simpler level, it may be learned as an effective means of avoiding an intolerable school situation.

Early Pain Experiences

Though such reactions appear complex, this is the nature of the response. It becomes more plausible when we consider that pain in earliest life is simple at its basis. Pain reflects

irritation to external nerve endings which move inward and upward along the central nervous system where it is experienced as pain by the brain. A variety of defenses and protective reactions is then marshalled on the part of the baby. Pain is always psychological in its final awareness within the brain. Before long, the growing child has developed pain memories which include discomfort giving rise to reunion with the reassuring mother, atonement for guilt feelings following a physical punishment, the intensity of pain involved in aggressive interaction, and the like. In time, therefore, emotional factors previously associated with peripheral pain of realistic external origin become displaced on to later and more complex internal emotional life issues.

Advice to Parents

It is wise and prudent for parents to be aware of this condition. Common sense appraisal of family tensions, parental overprotection, and anxiety regarding the child, as well as the child's personality, should all be kept in mind with adjustments made to alleviate problems. The advice of a physician is invariably sought. An appropriate attitude by the parent can go a long way toward helping the doctor. He would not feel under pressure to launch a "witch hunt" to find some obscure physical basis for the condition. In spite of negative physical findings extensive procedures often place a "physical illness stamp" on the condition which becomes deeply engrained in the child's mind. The treatment of choice is early identification with management in a common sense and psychologically oriented fashion over a long period of time. Quite frequently, a more intensive psychiatric undertaking becomes necessary.

"Much of your pain is self-chosen. It is a bitter potion by which the physician within you heals your sick self."
Gibran □



Soviet Naval Medicine

CAPT R. Paul Caudill, Jr., MC, USN

Aviation Medical Support

Conclusion

Review of Soviet military medical literature for articles discussing the Soviet flight surgeon, or "air physician," revealed much about various topics of concern to aviation medical support, the education of flight surgeons, and the practice of aviation medicine.

Senior Soviet military medical authorities discussed in considerable detail the professional competence and identity of the flight surgeon in the Soviet military. In introducing their discussion, the authors pointed out the increasing complexity of the aviation environment and the radically increasing demands on the human system charged with manning the airborne weapons systems. As the complexity of the mission, system, and task-loading increased and the cost of systems expanded, the fitness of the human system for mission performance was of greater importance than ever. Thus, the flight surgeon in the Soviet Union appeared to be facing the challenge of support-

ing the human factor in that complex equation. The flight surgeon's responsibility in that role was greater than it had ever been. (1)

Preventive medical work in the aviation unit, health monitoring of flight crews, and preflight medical checks required a broad spectrum of skills. These abilities demanded complete insight into mission performance demands so that psychomotor findings could be correlated with mission demands. In the words of Soviet authors:

In this article, there is no necessity for enumerating all of the numerous duties of the aviation chast [unit] doctor. It is only important to note that for successful performance of these duties, the aviation doctor must have specialized training differing from the training of the doctors in the other branches of the Armed Forces. (2)

Aviation medical training was not seen to exclude broad general clinical competence. The authors spoke of a still existing idea that practical aviation medicine has little in common with clinical medicine. This point of view is not only false but can be of

definite harm. It leads to a lag in work techniques and the capabilities of aviation doctors being assigned the level of medical science and a lowering of the medical qualifications. (3)

In an article which subsequently responded to the comments on clinical medical importance, Doctor of Medical Sciences, Colonel of the Medical Service, V.A. Ponomarenko discussed the view of the relationship of professional knowledge to the requirements of the aviation practice. He pointed out that the flight surgeon must have more than broad clinical and theoretical knowledge concerning aviation. In order to have "authority" in the aviation unit, the doctor must study the social and psychological peculiarities of the aviation community, the personalities of pilots, and the social atmosphere in which the flight and engineering crew lives and works. He felt that the flight physician's credibility with his unit members was tied closely to his insight into, and knowledge of, the unit mission and in-flight work.

The mission of the unit and the work performed in flight were seen as having a "channeling effect" on the personality of individuals serving in the unit. Ponomarenko concluded his

Dr. Caudill is Commanding Officer of the Naval Aerospace Medical Institute, Pensacola, FL 32508.



Soviet aircraft carrier Minsk underway off the Philippine coast.

comments by stating his opinion that the flight surgeon had a great role to play in the operational aspect of unit training and mission accomplishment. However, in a footnote, the editors of the journal rejoined by stating that his view was his own, and a one-sided one at that. The view of the editors of the journal was that the primary role of the aviation physician was medical support of flights, preventive medicine, and participation in flight examination. In the opinion of the editors, the physician's credibility depended more on his clinical efficiency in those roles than on his ability as an operational expert. (4)

Major General N.M. Rudnyy, *et al.*, wrote the following:

Every aviation doctor who has worked in the chast [unit] for a prolonged period of time can confirm that his expertise which promoted the success of his work depends to a high degree on what kind of doctor he is in the ordinary sense of the word, how qualified he is when it is necessary to state a diagnosis and give medical aid, to establish reliable sincere relations with the personnel, especially the flight personnel, to penetrate into their needs and

their lives with observation of the rules of medical ethics. (5)

In summary, Soviet authors believed a flight surgeon must be clinically competent to perform the overall aviation medical task. They realized, simultaneously, that it would be impossible for the flight surgeon to be all things to all men. They felt the aviation physician should have a thorough, well-grounded clinical education, and that each aviation specialist should pursue rationally the orderly maintenance and increase of both general clinical skills and aviation-specific knowledge. (6)

Several writers favored two programs that had to do with establishing certification for flight surgeons. They discussed two general concepts.

- Periodic certification of general competence.
- Establishment of three skill level designations for flight surgeons.

Periodic recertification would encourage physicians to work to maintain their intellectual and clinical proficiency. The skill level designations would present goals worthy of professional pursuit, providing recognition

and distinction to the achiever. (7,8)

Continuing clinical education was also viewed as being important. It was recommended by one author that flight surgeons be sent, at least once every two or three years, to medical refresher courses. (9,10)

A physician assigned as a chief flight surgeon had to be mature. Soviet experience had shown that it was preferable for an individual to have worked for a year or two as a junior physician before assuming duties as the chief flight surgeon for an aviation unit. Those just out of the Military Medical Academy did not do as well as those who had acquired training and experience in areas essential to the support of aviation units and developed both skill and experience in the practice of clinical medicine. (11)

The importance of maturity and clinical competence was paralleled by the need for insight into the peculiar aspects of aviation medicine. Soviet flight surgeons were tasked with making individual decisions about flight crew readiness for each flight that took place. Every member of the aircrew had to be certified as fit for flight. Such decisions required artful insight as well as academic and clinical skill.

It is sometimes more complicated to arrive at the conclusion that a man is healthy and ready for flight than it is to make a diagnosis that he is sick, especially if we consider the usual desire of pilots to carry out the planned flights and their known inclination to dissimulation. (12)

One article emphasized the importance of the role of actively participating senior physicians. Senior medical officers were tasked with responsibility of monitoring and shepherding the continuation of professional education of the younger flight surgeons. Independent study, medical conferences in nearby hospitals and medical units, and consultation with specialists and more experienced colleagues were encouraged. Finally the article stated that senior medical officers should see to it that the young aviation doctors received active medical practice training regardless of the impact of their absence on the routine of the local medical facility in which he was serving. (13)

Omissions in clinical training and experience were seen to influence even the routine periodic medical examinations of flight crews, resulting in less than professional practices. The basic problem in this area is the insurance of an optimal combination of good training with respect to all divisions of aviation medicine with sufficient knowledge of the clinical disciplines and skills in medical thinking. (14)

The work of the Soviet flight surgeon lay in close proximity to members of the flight crew. Aviation physicians examined Soviet aircrews before participation in assigned missions and the physicians certified them as fit or unfit for flight.

One article discussed the environment in which the flight surgeon was supposed to perform. Experience had shown the Soviets that the best monitoring of aircrew fitness generally occurred in aviation units that had the best facilities and equipment for the physicians' use. Such facilities

included a well-equipped medical aid station and a proper examination room for preflight medical examinations. The examination room was supposed to include the "latest apparatus by means of which one can objectively record any changes in the pilot's organism." It was noted that there was, at the time the article was written, no standardization of examining facilities and equipment. (15)

At some bases, there were "multistory rest accommodations and engineer control points" including a room for flight crew preflight examinations. However, noise from aircraft was said to often complicate both flight crew rest and medical evaluations. (16)

The literature also noted the importance of considering aeromedical support in construction of systems "for the centralized servicing of air technology," so that examination rooms would be adequate and functional.

Soviet flight surgeons' responsibilities went beyond the examination and treatment rooms. Physicians participated in analyzing the performance of pilots and flight crews through mission evaluation. Analytical methods included examination of radio communication information exchange, tapes from automatic flight recorders, and radar plots of the mission. Evaluation of landing techniques, and postflight pilot medical examinations after flight incidents were other methods described.

"In the process of flights, the air physician must constantly check the pilot's state of health and his work capability, he must be aware of all events occurring in the air and on the ground." (17)

A practical problem faced by the Soviet flight surgeon was one which concerned the manner in which he was expected to approach accident investigations such as forced landings or ejections. It was noted that at the time of the article's publication, April

1978, there was no "directive document" sufficiently specific in dealing with the responsibilities of the chief of the medical facility supporting the aviation unit and the duties of the unit flight surgeon in case of such accidents.

"The fact that no such description exists cannot fail to have an effect upon the work performed by the medical service. Therefore, young physicians arriving in the chast [unit] do not always have a clear idea of the work volume that they will have to perform." (18)

Additionally,

"At the present time, the training of air physicians in air physiology is irreproachable, but their knowledge with regard to questions of the medical analysis of erroneous actions required deepening." (19)

The Soviets had some experience with the training of physician aviators, or had, at least, considered such training.

"The available experience in training flight doctors has demonstrated that it does not appear possible to maintain the knowledge and skills with respect to these two professions of the required level in the future, for each of them requires total effort." (20)

Practical research in support of operational tasks was said to go on routinely. In one example, the author had sought to devise a relatively simple set of tests to evaluate the presence of excessive fatigue in flight personnel. He used "simple psychophysiological procedures" such as a reaction to a moving object, memory tests, simple arithmetic problem, tremor, dermatographia, and hemodynamic indices after functional load testing with simple exercises. The physician hoped to provide the flight surgeon the "possibility of discovering initial signs of overfatigue of the flight crew." (21)

Another physical problem encountered among Soviet aircrews was overweight. One article described a study of patterns of overweight and

obesity among pilots and flight engineers.

It is necessary to discover the people with increased body weight in time and continuously to put them on the report, to conduct explanatory work among them on the unfavorable effects of obesity on the state of health. It is necessary to recommend that these people increase their physical load (after careful medical examination and under the control of the doctor), reduce their consumption of high-calorie food, and so on. The performance of the indicated meas-

ures and the fulfillment of the enumerated recommendations will permit a decrease in the number of overweight pilots and engineers. (22)

Soviet naval units with aviation missions had concerns about adequacy of aeromedical support. On those Soviet ships with helicopter units, the helicopter crews experienced both physical and mental stress in their work. They were often faced with complex assignments, emotionally stressful solitary low-level flights, independent decision-making, heavy skill demands, and

constantly changing environmental challenges, both shipboard and geographical.

Great concern was expressed about physical and mental stress. Crew selection was of great importance in this respect, and the ships' surgeons required education in aviation medicine and methods of monitoring stress.

Ships' physicians were responsible for checks of aircrews before, during, and after flights. The surgeon was responsible, also, for monitoring the aircrew environment, their work and



Stern deck of the Soviet aircraft carrier Kiev.

rest patterns, and their health status with regard to diet, exercise, etc. There was emphasis on physical fitness. In summary, a ship's physician was responsible, for monitoring of:

- living quarters
- nutrition
- physical training
- observance of preflight work and rest routines(23)

Helicopter crews afloat were intermittently tasked with the evacuation of sick and wounded from naval and merchant marine ships. This was accomplished by a variety of methods reported in a 1967 article.(24)

Swinging ladder

- healthy individuals only
- climb holding only one side of the ladder with its position between the legs of the climber
- heels in, toes out herringbone climbing pattern
- one on the ladder at a time

Suspension system

- similar to parachute harness
- hooked to winch cable
- hoisted in sitting position
- left them 1.5 meters out from the helicopter door so entry was somewhat difficult

D-ring

- cork/leatherette wrapped cable similar to the U.S. collar, under arms around back of patient
- fastened in the front of the patient
- contraindicated for severe chest wounds
- contraindicated for fractures of spine
- contraindicated for injury of upper extremities
- contraindicated for patient inclined to orthostatic collapse

Stille stretcher

- fastened with straps
- raised vertically if possible
- horizontal if cannot lift vertically

- guy wire attached to head of the litter to control litter oscillations, and to keep it from snagging under the helicopter

Ship's stretchers were occasionally used with patients' legs hanging. A more difficult technique was required for a lift by such a method.

Experience had shown that the helicopter crews had to be constantly wary of the masts of small ships. The author of the article recommended that only experienced aircrews be used for small ships operations.(25)

At the present-day stage of aviation development, the air physician plays an important role in questions of maintaining flight safety, preserving the health of the flight personnel, and prolonging flight longevity. He must constantly keep in his field of vision everything that occurs during the flight day, he must know the psychological and physiological state of the pilot who has made the flight and who is preparing for an even more complicated mission. He must know the pilot's everyday living conditions, his moods, the overall condition of his organism, the parameters of his physiological functions; for that will determine the correctness of the conclusions relative to certifying the pilot for flight.(25)

The results of articles concerning aeromedical support of Soviet aviation was, in many instances, like reading a chronicle of issues from our own experience. Whether considering the necessity of special aeromedical support, or debating the differences between the "clinician" and the "operator," similarities of concern were striking. "What kind of doctor he is in the ordinary sense of the word" was a phrase which sums up the method of some of the most effective flight surgeons. Those individuals were clinically competent, mission-experienced, and intimately involved with the human dynamics of members of the unit and their families. That model, as awkward as it is,

will remain the most effective one in many respects. The times, however, may have made the costs too great for such a model to be universally applicable.

The process of periodic recertification of competence is currently in process in our own aeromedical community.

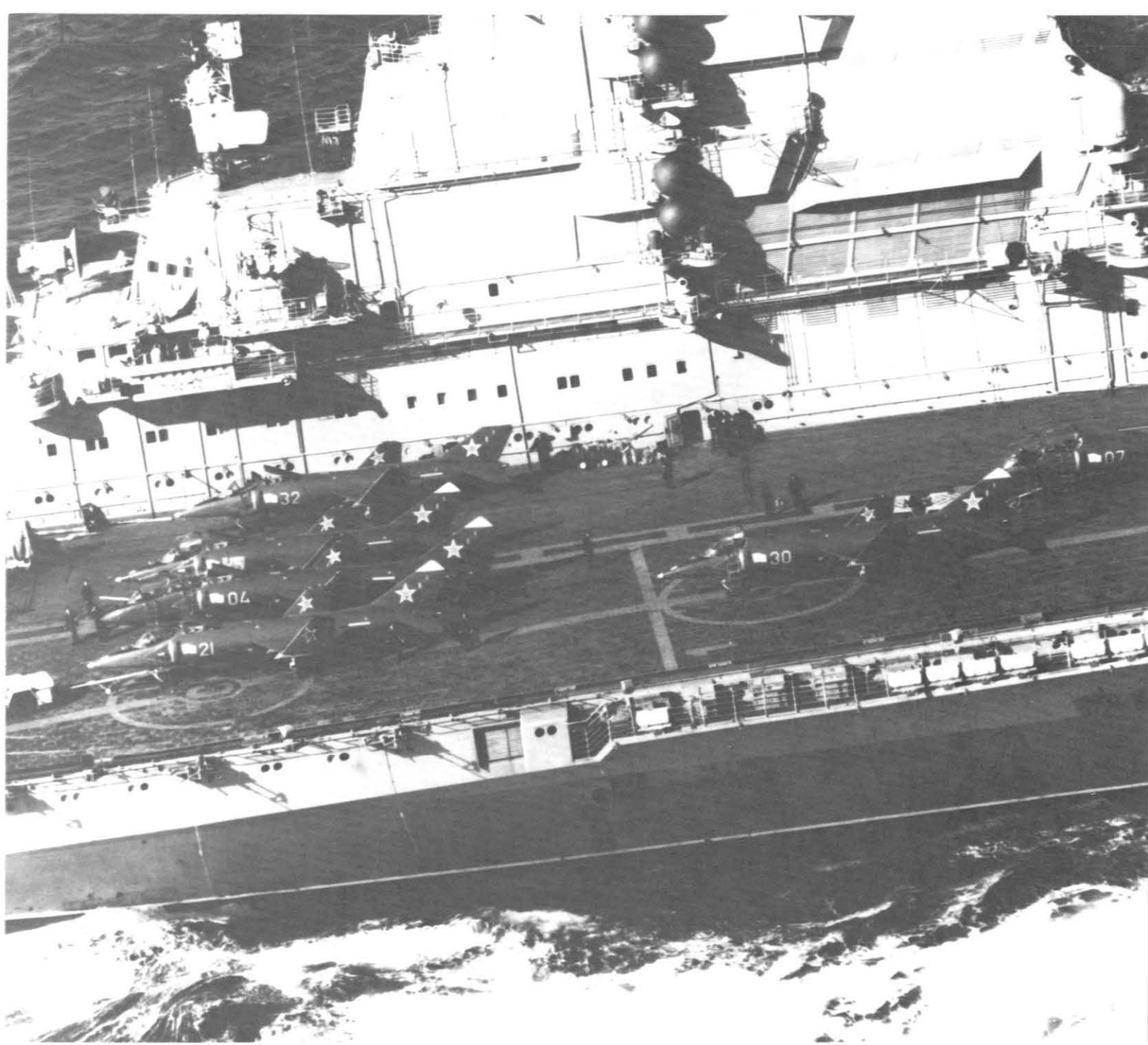
The establishment of skill level designations for flight surgeons has been considered in the past by our own senior personnel, but has not been accepted.

Continuing medical education is a priority subject in assurance of quality in our own efforts.

As the Soviets commented on the quality of the very new flight surgeons, they made an important observation. They advocated that young physicians work as junior members of a team before assuming roles alone. The experience of our own aeromedical and naval medical support community has shown that, in facilities where there is no experienced senior professional leadership, the quality of work accomplished may be less than desired. The task of professional and clinical direction of highly skilled and intelligent young physicians requires seasoned and sage leadership from individuals qualified and competent to earn the respect of their juniors. The absence of such mature clinical and professional leadership deprives the developing professional of a maturation factor of inestimable value.

Insight into the personality of the Soviet aviator is revealed in the comment about pilots and "their known inclination to dissimulation." Human nature, apparently, is not changed by national boundaries or political ideologies. Most pilots want to fly, even when ill. A few don't want to fly at all. Telling the difference can be an interesting task for a physician.

The need for increased skills in accident investigation is a phenomena experienced in our own community. Translating academic and didactic exposure into action and actual per-



YAK-36 "Forger" combat aircraft, wings folded, line Kiev's deck.

formance is not a simple process.

Support of aviation units assigned to aviation-capable ships is a common concern to modern seafaring nations. In those articles that discussed evacuation by helicopter from ships and submarines, there is a remarkable similarity of operational concerns. The litter lifts discussed suggested that both the Soviet and U.S. navies face the same difficulties.

Conclusion

Whether or not the literary essays in Soviet medical literature reflect the realities of day by day life of Soviet naval physicians is known only to those who serve in the new navy so well organized by Gorshkov. There is little doubt, however, that Soviet physicians must feel a strong sense of pride in their chosen work. A career in military medicine in the Soviet

Union is said to be voluntary. Much effort is expended in planning for the indoctrination, training, and professional work of the physicians, and much thought is invested in their leadership and military professional advancement. Such effort could hardly fail to have positive results.

Thoughts of the Soviet military medical leadership were well expressed in the following paragraphs

taken from an article describing a major meeting convened to explore and discuss the work of the military physician. The conference was designed to examine the qualities of the successful and respected military physician. The conference agenda centered on evaluation of the method and experiences of successful military physicians.

New groups of military doctors—graduates of the military training institutions—are entering the medical service of the USSR armed forces on a yearly basis. They voluntarily enlist as military doctors. This is easy to understand: these young, still inexperienced people will work on the forward edge of the battle for the health of the troops. They will be direct conductors of party and government policy in the field of public health.

These young doctors are in need of daily attention on the part of the chiefs and the senior comrades, who must help them determine their place in the military collective in the shortest possible time and acquire the practical work experience in their specialty. The success of the activities of the military doctor depends to a high degree on his respect from the command and the personnel of the chast.

The conference ended with a call to all of the department students to persistently muster their military political, and specialized knowledge, to educate themselves in the best features and qualities of the Soviet doctor, to preserve and multiply the glorious traditions of Soviet military medicine. (26)

The preceding words express a portion of the emphasis on leadership, education, and training in the development of the young Soviet military physician. The concern of the Soviet leadership for improvement of

their ability to provide physicians equal to the task of military medical support is clearly expressed. This paper has provided a glimpse of the effort directed toward naval medicine and the support of the Soviet fleet.

Our own naval medical equation today is multifactorial. It is not the simplistic blend of sick call and salt tablets experienced by many naval physicians in the 50s and 60s. It is a bewildering mix of argon and beryllium, of behavior disorder and drug abuse, of habitability and leadership, of heat stress, noise and asbestos, of lasers and isocyanates, of blood gases and respirators, of pulmonary function, microwave and radiation monitoring, fatigue, of stress, and of limited material and human resources. The equation is not simple; it is incredibly complex.

The demands currently before the Medical Department of the U.S. Navy are unrelenting. Their origins are as diverse as the tasks the Medical Department is expected to accomplish. The matter of naval medicine, of how we do business at sea, exerts its demands with quiet persistence.

The average member of our Medical Department, if sent to sea for even a short time, would go with anxiety and uncertainty if unprepared for the experience. The unfamiliar environment would present perplexing challenges. The process of earning acceptance among the ship's company would be an unfamiliar and sometimes awkward effort. Many tasks would be unlike those experienced in duty ashore. Why, then, would any individual be surprised to discover that work accomplished was less than completely done? Lack of will would not be required. Lack of knowledge and experience, alone, would suffice to cause inadequate performance.

Today, in our own Navy, we serve among a highly educated, intelligent, and dedicated group of naval professionals. Sharing with them the challenges of the new naval environment offers great opportunity and greater

subjective rewards. Working to insure their health and safety in peace, and their survival and victory in combat, is an exciting and demanding discipline.

We must insure that in research, in education, in naval medical organization, in selection of personnel for duty, and in the daily work of naval medicine we, like our Soviet counterparts, constantly strive to remain "true masters of our craft."

References

1. Kopanov VI, Rudnyy NM, Vavilov II: Some peculiarities of training aviation doctors. *VMZ* no 8, pp 18-21, 1975.
2. Ibid.
3. Ibid.
4. Ponomarenko VA: Specialized training of an aviation doctor. *VMZ* no 9, 1976.
5. Kopanov, Rudnyy, Vavilov: Some peculiarities of training aviation doctors.
6. Ibid.
7. Dorofeyev GI: The clinical training of air physicians. *VMZ* no 3, 1977.
8. Kopanov, Rudnyy, Vavilov: Some peculiarities of training aviation doctors.
9. Ivanov NV, Kulesh AP, Titorenko MI: The training of an air physician. *VMZ* no 3, pp 19-20, 1978.
10. Dorofeyev: The clinical training of air physicians.
11. Ivanov, Kulesh, Titorenko: The training of air physicians.
12. Kopanov, Rudnyy, Vavilov: Some peculiarities of training aviation doctors.
13. Ibid.
14. Ibid.
15. Ivanov, Kulesh, Titorenko: The training of an air physician.
16. Ibid.
17. Ibid.
18. Ibid.
19. Ibid.
20. Kopanov, Rudnyy, Vavilov: Some peculiarities of training aviation doctors.
21. Gorov AN: Discovery of the initial stages of overfatigue among the flight crew. *VMZ* no 3, pp 51-53, 1978.
22. Grishin IR, Kozacha PG: Disturbance of fat metabolism in flight personnel. *VMZ* no 4, pp 50-51, 1978.
23. Medical support of ships' helicopter crews with a single base. *VMZ* no 3, 1975.
24. Guryanov AA: The evacuation of the sick and the wounded from naval and merchant marine ships by helicopter. *VMZ* no 4, 1967.
25. Ivanov, Kulesh, Titorenko: The training of an air physician, p 20.
26. Bortsov AP, Dadayev IM, Sukhanov NV: Conference on the work of the military doctor. *VMZ* no 4, p 93, 1978. □

MSC Survey Results

Attitudes Toward Professional Specialization

LCDR P.T. Bruder, MSC, USN

LT M.C. Butler, MSC, USN

This is the fourth article in a series resulting from the Medical Service Corps survey conducted in April-May 1980.

In the last article, it was noted that approximately two-thirds of the surveyed officers regarded opportunity for education and training as one of the more important issues among career concerns. The question of who needs what type of special training, at what points in an officer's career, is also of importance to those in management responsible for officer career planning and development.

Even more essential, it is a matter of considerable consequence to the Navy Medical Department in meeting its mission requirements. Emphasis on continued education and training is the issue of specialization driven by accelerated advancement of knowledge and technology. This is certainly true in the field of health care with its myriad professions, including those which comprise the Medical Service Corps. The intent of the present article is to assess MSC officers' self-perceptions and attitudes about professional specialization.

In this analysis, attention was given the junior and middle grade officers with up to 13 years of commissioned service (as defined in previous articles of this series). It is these officers who regard continued education and professional training as especially important in their career development. In addition to having the officers identify their specialty and subspecialty areas of qualifications, two questions from the survey were of interest: (1) How specialized do you regard yourself at this time?; and, (2) How interested are you in further specialization? The officers responded to each question on a six-point rating scale.

LCDR Bruder is the Head, Research Department, Naval School of Health Sciences (NSHS), Bethesda, MD 20014, LT Butler is a research psychologist at the Naval Health Research Center, San Diego, CA 92138.

The authors wish to thank LCDR John Montgomery of the Naval School of Health Sciences, Bethesda, MD, for his computer programming assistance.



Physiotherapist LT Carol Smith, MSC, assists patient who has recently undergone knee surgery.

Perceptions of Current Specialization

The majority (70 percent) of junior ($n = 673$) and middle grade ($n = 482$) officers who participated in the survey regard themselves as currently being more of specialists within their professions than generalists. No significant difference in those perceptions exists between junior and middle grade officers. Though there are a few more with doctorate degrees among the junior officers, about 60 percent of both career stage groups have earned master's or higher graduate degrees in their specialties (see *U.S. Navy Medicine* 72 (2):3, February 1981). In listing the particular fields of their expertise,



Dietician LT Jeanine Brumbeau, MSC, counsels a patient.

In talking with MSC officers, one of the more likely topics to emerge is that of professional specialization. It is discussed in terms of billet requirements, career opportunities for advancement, education and training, and personal interests. From conversations I have with our placement and assignment officers at the Naval Military Personnel Command (NMPC), I know it is a concept central to most reassignment transactions with the commands and the individual officers alike. Specialization is an interesting concept, too, in the sense that it is fraught with ambivalence—a source of great pride and confidence for some and a source of considerable anxiety for others.

The propensity for technology to breed even finer technology has served as an inducement for trades and professions to correspondingly spiral to degrees of greater and greater specialization, much of which becomes institutionalized through unions and guilds into matters of licensure, certification, and other unique standards of qualification. Organizations, though they often lag other developments, tend also to move from simpler to more complex structures of specialized jobs and job relationships. The military has been no exception. Professor Kurt Lang used the term "tech-

nocratic" to describe this process of "revolution in technology that has affected the structure of society no less than it has the military establishment."* The formalized impact on the Navy has been well noted in the enlisted rating structure for some time. In fact, it has been the source of considerable manpower and personnel problems related to training, performance, and retention. To observe the general impact on the commissioned officer structure, one needs only to note the high proportion of line officers with subspecialty qualifications in quite technical areas of expertise who are selected for senior grades (see, as a recent example, *Navy Times*, March 30, 1981, p 36).

I alluded to these issues in my article on career planning published in the August 1980 issue of *U.S. Navy Medicine*. As a staff corps of the Medical Department, we perhaps have as complex a structure of professional specialization as any cadre of officers. Nonetheless, as is true for the line officer community, there remain in the organization many requirements for officers of relatively general skill and professional

*Lang K: Technology and career management in the military establishment, in Janowitz M (ed): *The New Military*. New York, Russell Sage Foundation, 1964, p 40.

capability, with an emphasis on breadth rather than depth of knowledge. For MSC officers this is true not only for those formally trained in fields of health care administration and management, but for those with academic degrees in science and clinical professions as well.

To plan careers and officer development resource requirements, we must be sensitive to organizational requirements for various types and degrees of professional specialization. Those requirements, not the officers' interests, must be the driving force. At the same time, however, a comparable sensitivity to professional interests and needs of our officers must also be maintained. It is for this reason that the present article derived from the MSC career attitude survey is so important. For, as complex as the issue of professional specialization is, the authors highlight a few of the variables that might be considered in understanding officers' perceptions and attitudes about specialization. As with the other articles in this series, it is the intent that the observations discussed will stimulate more questions and further dialogue about these issues among our officers.

P.D. Nelson
CAPT, MSC, USN

the officers identify with 48 different specialty and subspecialty areas.

Does the type of profession or occupational field make a difference in how an officer perceives his or her current degree of specialization? It appears to, at least when referring to the MSC general occupational categories of administration, science, and clinical professions as previously defined (see *U.S. Navy Medicine* 72 (3):10, March 1981). Of the officers in

clinical professions (n = 383), 86 percent perceive themselves to be relatively specialized, in contrast to only 54 percent of those (n = 534) in the health care administration profession. The science officers (n = 236) are similar to those in clinical professions, 79 percent regarding their current professional capabilities as being more specialized than general. Within each of the three broad categories of profession, no

significant difference was observed between self-perceptions of junior and middle grade officers or between officers procured from different sources (e.g., inservice vs direct appointment).

Interest in Further Specialization

As specialized as these officers consider themselves to be presently, more than half (64 percent) express an interest in further specialization

TABLE 1. Perceptions and Interests of Junior and Middle Grade MSC Officers About Professional Specialization*

Officer Category	N	Percentage Who Perceive Themselves Presently Specialized	Percentage Who are Interested in Further Specialization
<i>Junior Grade</i>			
Administrative	283	54	72
Science	144	78	78
Clinical	246	86	74
Total	673	72	74
<i>Middle Grade</i>			
Administrative	253	52	42
Science	92	79	55
Clinical	137	86	66
Total	482	67	51

*Officers were coded as "specialized" in their self-perceptions and future interests if their responses were above "3.5" on the respective 6-point rating scales.

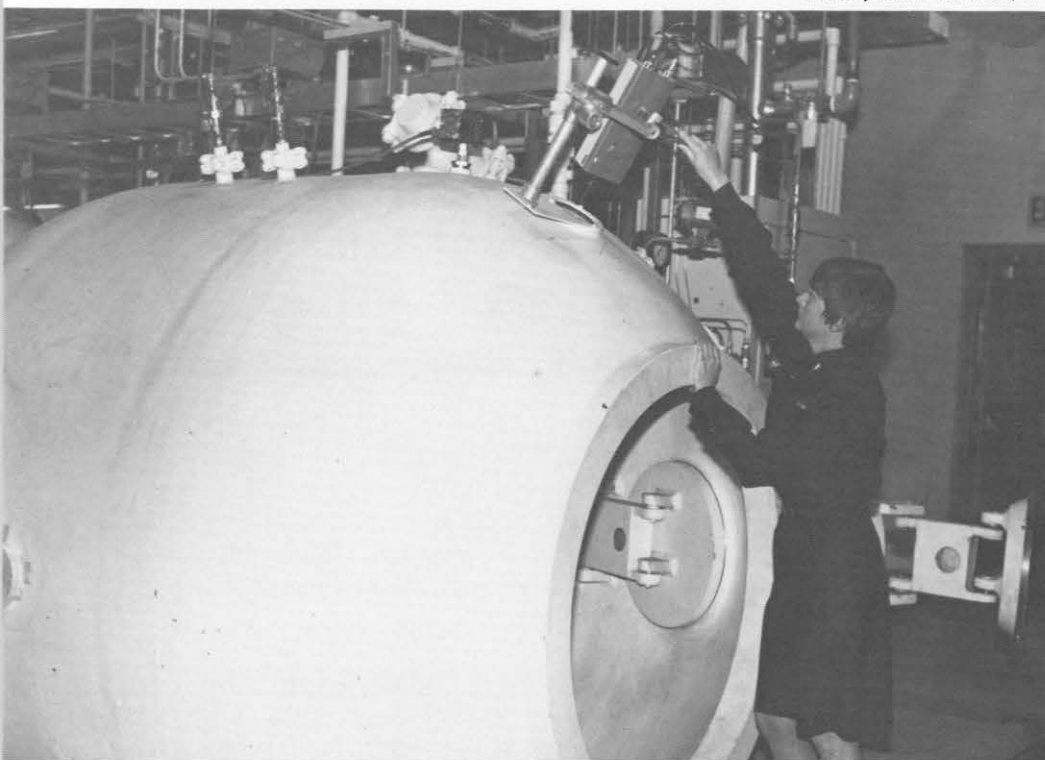
within their professions. In this instance, however, officers differ by career stage, with 74 percent of the junior officers compared with 51 percent of the middle grade officers expressing such interest. That general difference between officers of the junior and mid-career stage groups is significant as well within the professional categories of health care administration and science officers; and though not statistically significant, the trend is there among officers of the clinical professions as well. Table 1 provides summary data on the various subgroups of officers. As with perceptions of their current degree of professional specialization, officers of clinical professions are most likely and health care administration officers are least likely to want further specialization.

Shifts in Perspective

Though the survey was not designed to adequately assess if and how officers change their attitudes over time, the cross-sectional data suggest the likelihood of shifts in perspective as one progresses in a professional service career. In this instance, officers who expressed interest in further professional specialization, regardless of how specialized they perceive themselves to be presently, illustrate this point. As shown in Figure 1, there appears to be an almost linear negative relationship between officers' interests in further professional specialization and their age, a variable which is related to but not a perfect correlate of career stage in the Medical Service Corps. This is consistent with survey results reported in previous articles, namely those pertaining to a decline of interest in continued education and training from junior to senior officers.

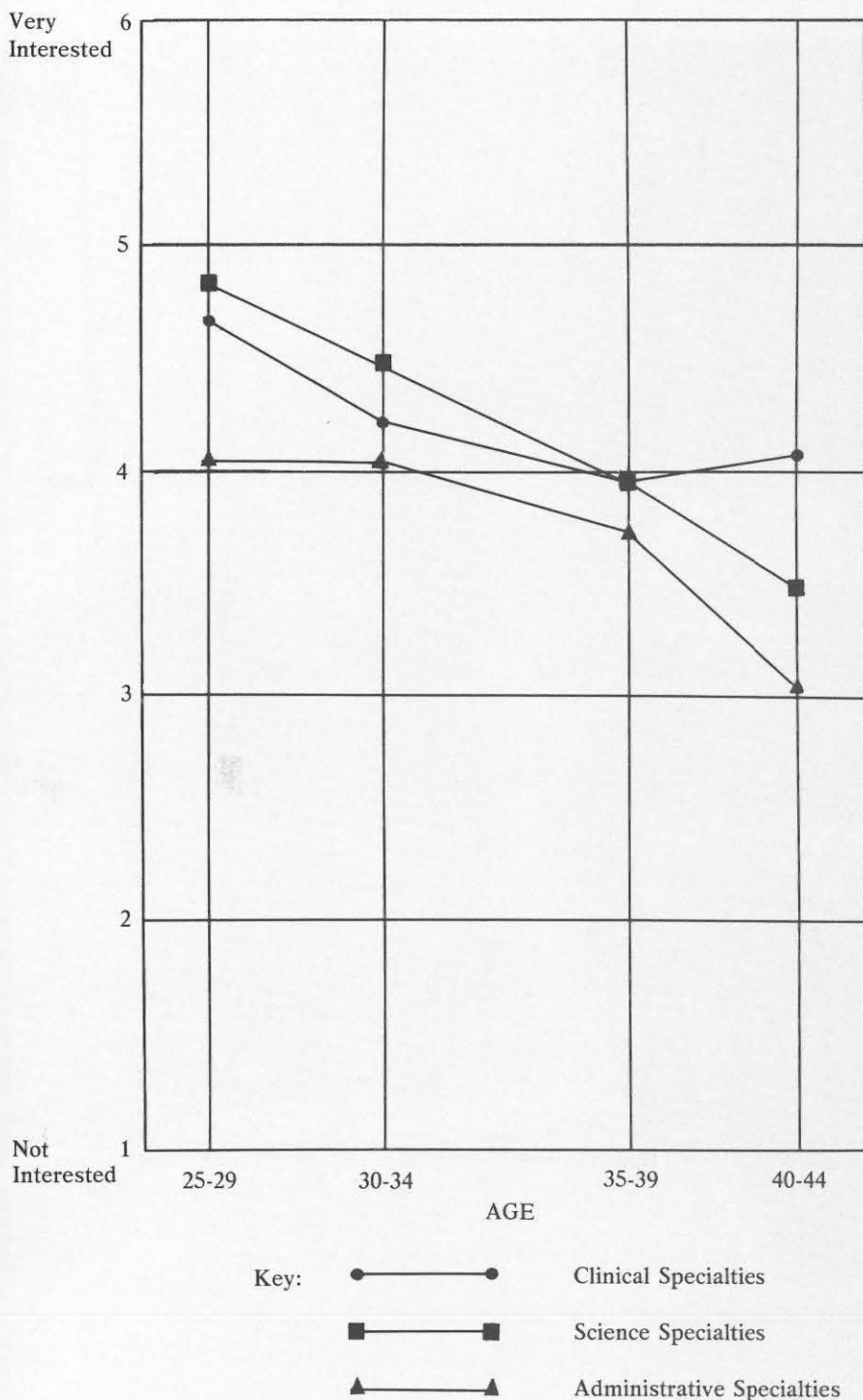
At this point, we can only speculate about the reasons for the decreased interest in specialization with age. One reason might be that as officers progress in their careers, they have already achieved the degree of specialization they once desired as junior

Photos by HM2 J. Parmenter, USN



LT Sarah Gilman, MSC, adjusts TV camera atop hyperbaric chamber at the Naval Medical Research Institute, Bethesda, MD.

FIGURE 1. MSC Officer Interest in Further Specialization



officers. On the other hand, their views toward generalization versus specialization may have become moderated by virtue of experience in their professions or by developing other priorities in their lives (e.g., family interests). Perhaps as likely, many officers' perceptions of advancement opportunities and position requirements of the organization for more senior officers temper their interests in being highly specialized as they progress through a naval career. In any event, the reality of matching billet requirements with officer professional needs and interests must be dealt with by career planners and counselors as well as by the officers themselves.

The information gained from examining the responses will no doubt lead career planners to investigate the timing of specialty training as it applies to the variety of specialties we have within the Medical Service Corps. For example, specific considerations may be fruitful in areas like the following:

- Examine the desirability of providing officers with further specialty training very early in their careers.
- Determine the degree to which early assignments to operational tours tend to motivate the officer toward greater specialty training.
- Gain a better idea of the overall value gained in providing mid-level officers with additional specialized training.
- Determine the generalist education requirements for all specialty clusters and determine at what point or points that education should be received in the career.

Each new analysis should bring us closer to understanding the relationships between the officers and his or her career. It is a complex task. In the next article, we will examine the perceptions officers have of their simultaneous professional roles as naval officer and staff corps specialist in the Medical Department. □

Tri-SARF

A Unique Facility Returns Patients to Duty

It seems at first an unlikely setting for an alcohol treatment unit—the converted second floor of a bachelor enlisted quarters on the grounds of the National Naval Medical Center. But there is nothing unlikely about its highly professional staff and the way patients suffering from alcoholism are rehabilitated.

The patients of the Tri-Service Alcoholism Rehabilitation Facility (Tri-SARF) are young and not so young, men and women, some in their first enlistment and a few near retirement. They are seamen, lance corporals, chief petty officers, Air Force staff sergeants, and Army privates. They are Navy commanders and Army colonels. Alcoholism, it seems, makes no distinction between age, social status, race, or sex. It is this unique aspect of alcoholism that makes it so treatable.

Like almost all alcohol treatment programs in the Navy, the Tri-SARF emphasizes human relationships and the therapeutic value of allowing patients suffering from this disease to interact. Mutual support is essential if alcoholics are to get well.

In many respects, the Tri-SARF is not unique. Its curriculum and operation are common to almost all Navy alcohol residential treatment facilities and is based on the model developed at the Naval Hospital, Long Beach, CA. Patients are treated in the physical, mental, and spiritual aspects of the disease, and along with the therapy, there is firm discipline. The Tri-SARF too, has a number of recovering alcoholics on its staff. Having experienced the disease themselves, they are very qualified to help others recover from it. What, then, makes it different? Very simply, the Tri-SARF is a successful attempt at interservice cooperation.

Why the need for a tri-service





Photos by HM2 J. Parmenter

A daily program of physical conditioning helps patients feel good about themselves.

program in the first place? In the mid 1970s, the Washington, DC, area already had a large military population. The Army had no formal residential program. As part of the National Naval Medical Center's psychiatry service, the 15-bed Navy inpatient program was also inadequate. The Air Force, too, needed something better.

In March 1977, the Surgeons General of the three services acknowledged that tri-service cooperation could help solve the problem. They acted shortly thereafter by convening an ad hoc committee to consider several sites for a common facility.

By July 1977, the committee had selected a site at the National Naval Medical Center. The second floor of a bachelor enlisted quarters was renovated, staff members from all three

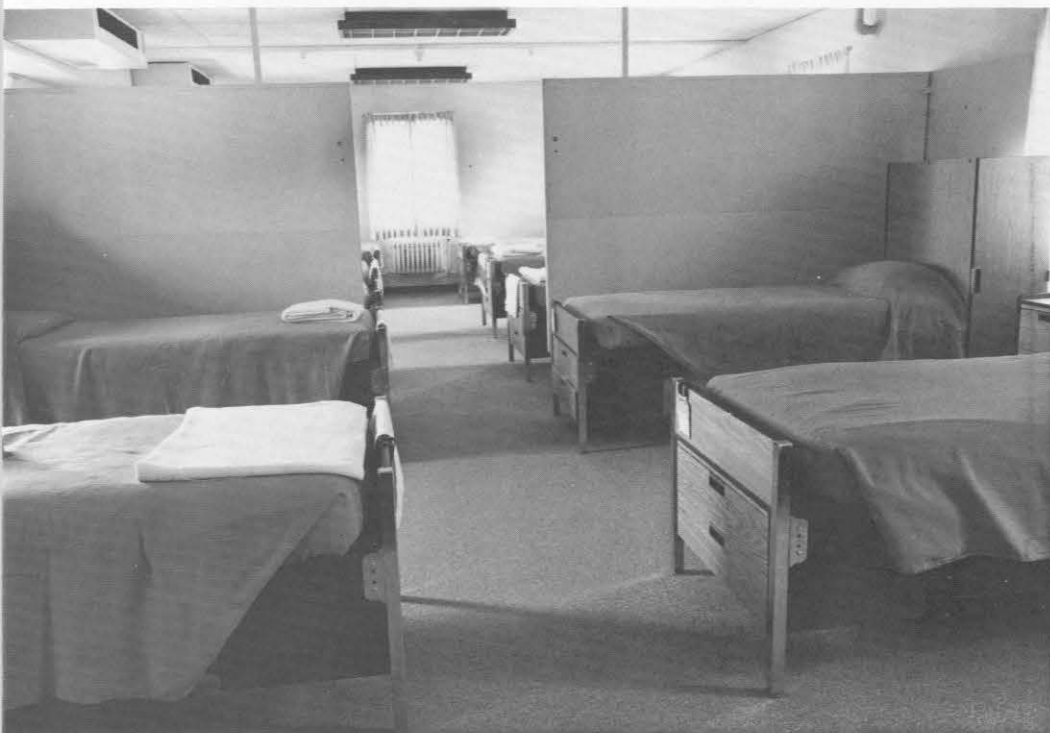
services were selected, and by September of that year, the Tri-SARF, the only alcoholism program designed to treat patients from all branches of the military, was a going concern.

According to CAPT George Negron, MC, USN, the Tri-SARF's commanding officer and presently its only full-time physician, the operation has been a valuable experience. In fact, one of its purposes, the encouragement of cross-pollination between Army, Air Force, and Navy, has been very successful. The now 56-bed unit is a durable amalgam containing the best of each service. The Air Force donated the concept derived from its very successful after-care system. The Army contributed its family program designed to help treat those close to the alcoholic patient. The Navy added its progressive

philosophy and the recovering counselor concept. From birth, the Tri-SARF had an unbeatable combination.

The Treatment Program

How do patients get into the Tri-SARF program in the first place? Some alcoholics correctly perceive their addiction as the destroyer of their marriage, family, and job. They either come on their own or the family intervenes and delivers an ultimatum such as described by LT Cindy Sennett, NC, USN, the unit's full-time clinical nurse: "'I love you,' the wife insists, 'and I want you to go for treatment. I can no longer live in this situation. If you don't go I am going to leave you.' The children, other relatives, and sometimes, even the alcoholic's boss, then have their say. At this point, the alcoholic usual-



Patients are responsible for maintaining their living areas.

ly will agree to enter treatment.”

For those who have experienced the physical symptoms of alcoholism—blackouts, liver damage, gastritis, pancreatitis, ulcers, or severe malnutrition—the reality that alcoholism is a terminal illness comes as an immediate and frightening revelation. The decision not to enter treatment is a death sentence.

More often, the alcoholic denies his illness but comes to the Tri-SARF because he is in trouble with the law or with his supervisor. His commanding officer or supervisor then prescribes the alternatives: Enter treatment or be medically or administratively discharged from the service.

Some patients are referrals from the National Naval Medical Center, other local military hospitals, or from bases in CONUS or overseas.

The treatment program begins as soon as the patient checks into the unit. He or she is medically evaluated and is assigned a bed in the male or female sections of the ward. A pa-

tient-sponsor helps with orientation. From the moment a patient enters the Tri-SARF until he or she leaves, drugs and alcohol are strictly forbidden. Many patients are young, basically healthy individuals. “Remove the alcohol and drugs,” insists Roger Roark, the Tri-SARF’s Clinical Coordinator, “and their own normal coping mechanisms take over.” To aid that process, each morning, just prior to small group therapy sessions, the patients receive their daily dose of Antabuse, a drug that will bring on violent side-effects if mixed with alcohol. Antabuse is the Tri-SARF’s insurance policy and most patients find it a useful, if temporary, crutch to help them toward sobriety.

Military discipline presides, with the customary musters, inspections, and details. During normal duty hours, each patient wears the uniform of his service with one notable addition—a name tag with just a first name. Regardless of rank or grade, patients and staff call each other by

first name on the unit. This symbolizes that alcoholism does not respect position or social status. The uniform reminds them that they are still in the military and the primary reason they are in treatment is to get well and return to duty.

The first two weeks, the staff evaluates the extent of the patient’s illness and tries to break through denial. Getting the patient to freely admit his alcohol addiction is a formidable task.

The duty day begins at 0630 and there are specific activities scheduled until at least 1700. A modified schedule exists for holidays and weekends. During these first two weeks, patients attend lectures, films, small group therapy sessions, a minimum of 14 AA (Alcoholics Anonymous) meetings, and engage in some form of vigorous daily exercise such as jogging, swimming, or basketball. The physical training program is aimed at reversing the patients’ physical deterioration brought on by their addiction. It also offers them some much needed positive reinforcement. As they build their stamina, they begin to feel better about themselves.

By the 14th day, the patients have also shared their autobiographies with their colleagues in the small group therapy sessions, an exercise that enables them to relate their backgrounds and drinking history.

Staffing. The third week marks a significant milestone called Patient Staffing, a formal evaluation of the individual’s progress in the presence of the assembled patient community. The patient sits before the group and his counselors and answer questions. The staff is looking for a recognition by the patient that he or she is in fact suffering from alcoholism. For many alcoholics it is a worrisome exercise, for the questions get right to the point and establish whether the patient has overcome denial.

The evaluators also look for the individual’s willingness to continue in treatment. After being alcohol- or

drug-free for two weeks, the alcoholic is in a much better position to make that decision. Almost all choose to stay.

Before Staffing is completed, the evaluators ask the patient what he or she must do in the next four weeks to achieve recovery. Also, what does the patient intend to do about involving significant family members—spouse, adolescent children, and in some cases, parents, siblings, and close relations. Based on this “trial,” the patient is allowed to remain, placed on probation, the “Critical List,” or discharged from the program.

Several elements can lead to discharge—being disruptive or unwilling to work in group therapy, consistently violating the rules of the unit, or the use of drugs or alcohol. Usually, however, after two weeks at the unit, most patients, even those that come unwillingly, determine that their two-week investment has been

worth it and they will do what is required to remain. Few are actually discharged before six weeks are over.

Co-Alcoholic Participation. The remaining four weeks are a busy time for the recovering alcoholic. Small group therapy and daily physical training continue as do the films, lectures, and AA meetings. But something new and very important is added—treatment for the spouse and children, and sometimes a parent. These “co-alcoholics” are as much victims of the disease as the alcoholic. They have suffered, perhaps for many years, their father's or husband's rages and stupors—and the shame. They have been the “enablers,” making his excuses for chronic absences from work and undermining attempts to reverse the disease. Most importantly, they need help for their own sake. Helping the co-alcoholic recover from the effects of alcoholism is not only an act of

compassion but a sound investment in the future sobriety of the recovering alcoholic and the future of his family.

It is, then, in the third or fourth week that the patient is encouraged to have his spouse and/or children join him for treatment. In some cases, patients may use the military medical evacuation system to bring dependents to Bethesda.

For the next four weeks, the co-alcoholics participate in the treatment program but not as residents. The local Housing Office maintains a list of private rooms for rent. Occasionally, arrangements are made to house them in nearby hotels, at the Walter Reed Inn, or the Navy Lodge. In addition to small group therapy, the co-alcoholics attend AA meetings to help them understand the alcoholic and Al-Anon meetings for their own sake.

Therapeutic Pass. For the first two

Watching People Get Well

Roger Roark, social worker and Tri-SARF Clinical Coordinator, has been with the unit four and a half years. He finds the job particularly gratifying because the therapy is often so successful that many patients show marked improvement in a relatively short time. In fact, after only six weeks of treatment, between 70 and 80 percent of those treated return to duty, well on their way to recovering from alcoholism.

USNM: Tri-SARF's six-week program has a very impressive success rate.

Mr. Roark: People get well here and they get well quickly. The changes we see in people's lives which they themselves are making within the framework we provide

—changes they make in six weeks—are absolutely phenomenal! One of the consistent comments we get from the psychology interns who come through this unit for training is that they are really surprised how quickly people get well. They compare this to the traditional psychiatric ward in a hospital where people have much more serious problems and are much harder to deal with. Many come here with the idea that alcoholism is untreatable. They don't like alcoholics and they don't want to be around them. They come here and after six weeks they radically change their ideas.

One of the things I noticed was the fact that you really treat the whole patient. There seems to

be a well coordinated approach to the problem.

We try to treat the patient spiritually, psychologically, emotionally, and, as a good social worker, I'd like to add, socially too. Their social relationships are very disrupted. They don't know how to have fun without alcohol or drugs. Most of their friends have been drinking friends. They now have to get a whole new batch of friends. It's the first time many of them have ever played without being drunk. Sometimes they are scared and don't know what to do. Some people don't know you can barbecue a hamburger without a beer in your hand.

I've observed that when some patients check in here they seem

to have a very negative and intransigent attitude. How do you draw them out? How do you know when to push and when not to push? How do you handle a patient who is not making progress?

That sometimes is hard to know. We have a patient here now who is very angry and withdrawn. He's also been physically abused in the past and is very vulnerable. You have to be very careful not to psychologically abuse that patient. It's sometimes very difficult to

figure out how much to challenge someone's defenses and help him to join the group and participate. There's no one right way to do it. You have to assess the patient and based upon your past experience know when to do the challenging and when to do the supporting. Often, patients trust the caring of the other patients more than the caring shown by the staff. They're not sure why we care. They often think we care because we're paid to. Often, when we find a patient

who is having a hard time being here, we do what we can to keep him here and in touch with what's going on. We let the other patients do a lot of work with that individual. Usually, in a week or two they make a complete turnaround and wouldn't leave if they had to.

The small group therapy session seems to be the focus of a lot of interaction.

This is where we deal most directly with feelings and the staff-patient and the patient-patient relationships.

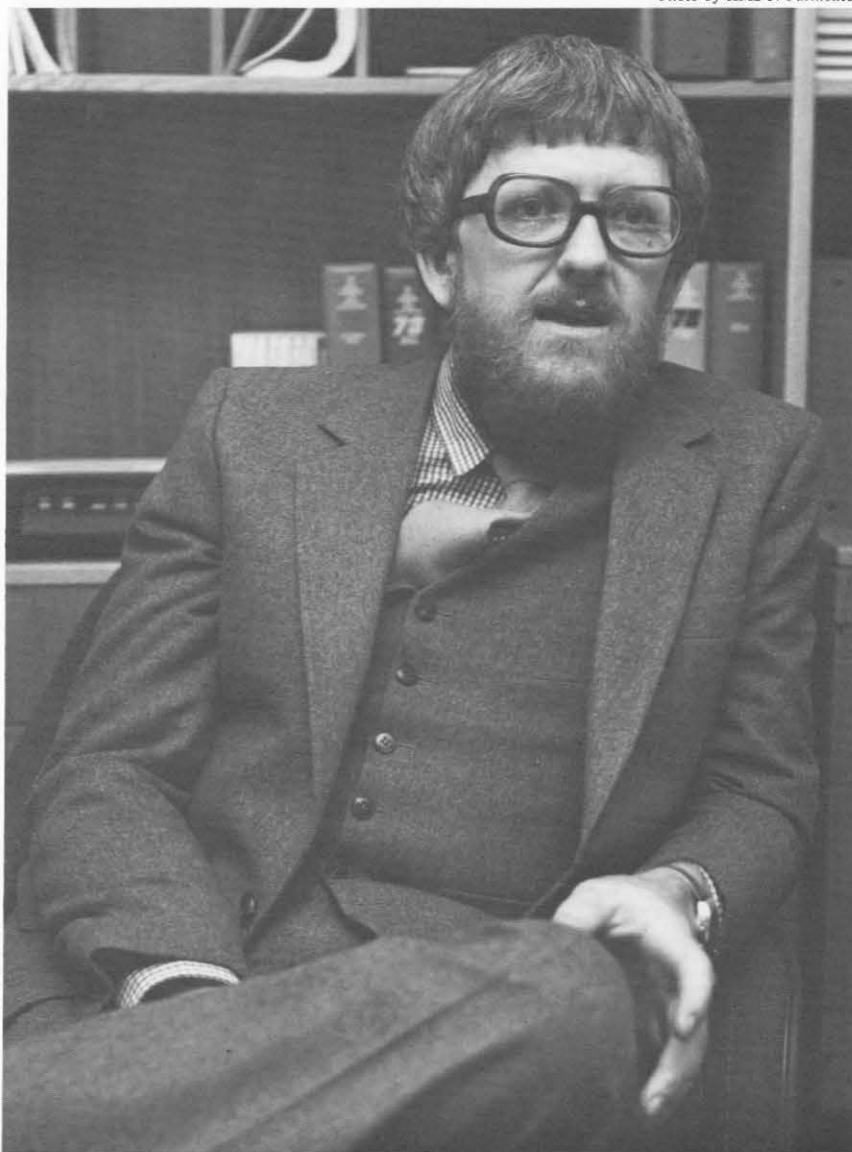
What about those patients who don't make it through the program?

Just because a person doesn't complete this program doesn't mean he won't recover. What the patients have gotten while they're here are the tools to deal with the illness once they are ready. Some will eventually come back into treatment either here, at another program, or they will start going to AA and do what they need to do to recover. Others continue to drink and get into trouble. Some of them die.

Is it necessary for one to have been an alcoholic to understand what this disease is all about?

This is an issue that comes up repeatedly at our staff meetings. On our staff, we have a balance between recovering alcoholics and nonalcoholics. I think the balance is important. I cannot truly understand what it is to be an alcoholic. What I think I know is how to help people who are suffering from that illness. The focus in our program isn't on being drunk. The focus is on being sober. That's what people are trying to learn here. This is not a program about not drinking. It is a program about living.

Photo by HM2 J. Parmenter



Mr. Roark

weekends, all alcoholic patients remain at the Tri-SARF. After Staffing, those who are not on probation or the Critical List are encouraged to take a therapeutic weekend pass, to leave the unit, and interact with their families in a more natural setting. However, they must agree to attend at least one AA meeting that weekend.

Community Government. The emphasis on discipline and responsibility is reflected in the existence of a patient community government. Patients periodically elect a Community Chairman, a Master at Arms, a Physical Training Coordinator, and a Transportation Coordinator. The responsibilities of these officials are many and varied but, suffice it to say, the concept of community government helps foster a spirit of group awareness and responsibility.

Lectures and Films. Lectures and films on various alcohol-related topics are frequent. Staff members and outside speakers address such subjects as the nature of alcoholism, the addictive personality, assertiveness, alternative lifestyles, and Alcoholics Anonymous. There is also a women's group that deals with specific problems faced by female alcoholics and co-alcoholics.

This regimen educates the alcoholic to the psychological and physical aspects of the disease and helps clear up myths and misconceptions. Some films like *Symptoms of Sobriety* alert the alcoholic to the signs of recovery and help answer questions like "How do I know I'm getting well?"

Yet as important as this didactic aspect of the program may be, nothing can substitute for the critically important and highly effective individual and group therapy sessions. Here is where the most effort is expended in counselor-patient and patient-patient encounters. Here is where the alcoholic must confront the hard issues of his drinking. Here is where much of the real progress is made.

Small Group Therapy. It may be

known in other contexts as group encounter or group discussion. Here it is "Small Group" and it is an important and hallowed tradition—a morning ritual that cannot be violated. A dozen or so patients and a facilitator, usually a social worker, sit in a circle and deal with individual feelings—long pent-up emotions about broken homes and alcoholic parents and spouses, about physical and psychological abuse they have encountered, unresolved conflicts about themselves that may or may not have contributed to their alcoholism. Here too they discuss relationships—with their wives, husbands, children—newly formed ones among themselves and staff members.

One young private violated a unit rule last night that prohibits patients from attending an off-limits activity. He is losing his therapeutic pass next weekend and is angry. He feels both the rule and his punishment are unfair. His fellow patients disagree and freely chastise him.

A newcomer, an Air Force major, sits slouched in a chair nearest the door. The facilitator asks him to introduce himself to the group. He grudgingly does so but insists that he is not an alcoholic at all and simply has a little trouble now and then holding his liquor. The others voice their skepticism. Tom is in denial, one of the primary symptoms of alcoholism and is not yet willing to admit the obvious.

Another patient, whose assignment last night was to write her autobiography, quietly reads a tale of family discord, a father who drank himself to death, and her own flirtation with alcohol, drugs, and suicide. She finishes the painful task, obviously relieved. Tears of sadness and understanding run down the faces of several group members. They understand. They've been there too. Gently, other group members begin to question her about what she has read and slowly the anguish eases. She speaks freely now with no shame. The tension is gone and there

is laughter and wise-cracking. They are a family, sitting around the dinner table after a very trying day at the office, sharing good times and bad, comfort and compassion. Tomorrow, someone else will sit in the "hot seat" and read, and be cross-examined, and come clean. Honesty is *very* sacred in Small Group.

Personal Growth and Awareness Lab. Psychodrama, or role-playing, is another tool used in the treatment program. This afternoon, the patient community will take part in a session in which one patient will confront a personal problem, meet it head-on, and hopefully, with the help of his peers and the lab director, reduce that problem to its lowest common denominator. The director, in this case, a member of the unit's staff, casts the roles for the drama and improvises the script.

The protagonist is a 23-year-old male alcoholic who feels he has lost his self-respect, a commodity he desperately wants back. Under the director's experienced guidance, he confronts those individuals in his life that may have either positively or negatively affected him and perhaps contributed to his present misfortune. Those roles are played by the other patients.

After about an hour and a half of confrontation, he begins to see his life from a slightly different perspective. Everyone in the room may be emotionally spent, but one thing is certain. Something positive has occurred. The protagonist admits that his battered self-respect may not have been lost at all. It simply needs refurbishment.

The exercise has not offered a miraculous cure at all. Where before there were doubts and total confusion, now there is some order and understanding of what needs to be done. What has happened this afternoon is but one positive step in a long, painful recovery. He and his fellow patients still have a lot of work ahead.

(To be concluded in the June issue)

An Alcoholic's Last Chance

When U.S. Navy Medicine interviewed him, Jerry R. was a patient at the Tri-SARF and had just completed the six-week program. Curiously, he had been through an alcohol treatment program at Bethesda several years before but afterward had returned to drinking and the familiar pattern of job and family problems. His latest bout with alcohol was far more serious. When he checked himself into the Tri-SARF, there was evidence that his liver had been affected. Jerry's choice was simple. This time he had to recover, for a relapse would mean his premature death from alcoholism.

USNM: I understand you have been here before.

Jerry R.: I was here about eight years ago when the unit was 15 beds and part of the psychiatry service. There were people in here with all kinds of psychiatric disorders. There were two counselors then. Shortly thereafter, the first psychiatric social worker came to work on the ARU (Alcohol Rehabilitation Unit) as it was called then. Most of our days were filled with looking at films on alcoholism.

The difference between that program and this is totally dramatic. They've taken the best of the Army's program where they bring in the family for treatment; the Air Force brings in their Social Actions Program and the two-year aftercare plans. The staff too has grown by leaps and bounds.

I perceive a very dramatic change in treatment procedures. In those days, the alcoholic pa-

tients gathered in one room on the psychiatric ward and we would have our own semi-AA meetings. There was no such thing as small group therapy. We didn't do psychodrama. We talked about AA and discussed how we would make the transition into AA when we got out. That along with the educational program and the physical examinations to determine what was wrong with us physically was the extent of the program.

Today, it's the total treatment concept. I just could not understand at that time how alcoholism had entered into all my other relationships. I perceived it solely as a character defect that had to be eliminated and AA would do that. The educational process is certainly here. The biggest key is the small group and what we do with the therapists and facilitators. There are emotional breakthroughs where you begin to see how behavior patterns are formed and perpetuated.

The first time I left here I really thought I was not psychologically fit. I felt there was something wrong with me that made me drink the way I did. What I eventually learned was that I drank because I was an alcoholic, that my body had developed an intolerance to alcohol.

Did you have a history of alcoholism in your family?

No. My parents were both fundamentalist Baptists and never drank. In the community where I grew up, everything was black and white. The people who drank were bad and the people who didn't were good.

When did you take your first drink?

In my case, I had a lot of emotional conflicts when I was growing up and those scenes kept repeating all the way through grade school. Because my mother played a dominant role, there was always a lot of conflict in our household. I felt that I wanted acceptance from my brothers and sisters more than anybody else and they totally rejected me.

When I got to high school I got out of the family circle and found alcohol. I had two brothers. They kicked my ass all over the place all the time. The first time I drank, they stopped.

That really meant something.

It meant a whole lot to me. Adolescence was a very difficult time for me. We found some wine one day and drank it. You bought a bottle, threw the cap away, and drank until it was gone.

The good things alcohol did for me passed in about three months. From that point on it was problem drinking.

But I do remember trying to get sober. There were tearful scenes with my family—great admonishments like "Why are you doing this to us?" and severe beatings. Every time I promised them I was going to do better, I really meant it. But nothing worked. I finally dropped out of school and joined the Navy at 17. I really liked the Navy from the very first day. It was a disciplined organization. I knew exactly what was expected of me. The problems began as soon as I got out in the fleet and encountered alcohol again. My pat-

tern was to save all my money, go ashore on liberty and drink it all up. A liberty was not complete unless I was drinking to unconsciousness.

This undoubtedly got you into serious trouble.

Nothing other than coming to work late. I could never be anywhere on time or get my gear straight. But I wanted to. This behavior was not a conscious rebellion against the military or anything like that. I just couldn't stay sober long enough to get things straight.

I finally got busted and shortly thereafter married a gal who turned out to be an alcoholic. She was having blackouts. I never had blackouts. We would have terrible fights usually about booze. It was a terrible relationship. I could not accept the fact that she couldn't remember anything. I thought she was lying.

Anyway, I got myself straight, at least as far as playing the military game and covering up my drinking.

How did you do that?

I learned to do two things—to make a concentrated effort at being where I was supposed to be and to wear a clean, sharp uniform. I found that if you did those two things you could never get into trouble. People would stick up for you, go to bat for you.

I eventually got out of the Navy. I had been in 10 or 11 years at that point and went to work for a TV station. The money was really miserable. I lied to get the job and told them that I had produced and been on camera. I thought if I hung around the station enough, I could learn what I had to.

The pressure really got to me. It

was much more demanding than the Navy had been so I decided to come back in and was assigned to a radio station overseas.

Were you still drinking?

Oh, yes. I was always on the brink of disaster. I even got drunk on the air one night. It was very bad scene. They were going to court martial me but waited too long to give me a blood test. I made my first AA contact and attended a meeting and they dropped the charges. I then went to the club to celebrate.

I came back to the States and the booze and the weight were outrageous. I weighed about 260 pounds and I couldn't wait till the end of the day to drink anymore.

About that time, the Navy had announced its alcohol treatment program. When the instruction came out that said it wouldn't be punitive and that I could get treatment, I wanted it.

Yet, even then, I remember feeling that I didn't really qualify for alcohol treatment because I was not that bad. I had a drinking problem but that was because I didn't have much will power. I felt I had to beef up my story once I got to Bethesda so I would qualify. Wasn't that a ridiculous thought?

Everything around me was in confusion. I wanted to kill my wife (I had remarried), and my first wife, and everyone around me. I just wanted out.

I spent the six weeks here, went to a few AA meetings. I did not want to drink anymore but was to miserable to stay sober.

Wasn't AA enough?

After the alcohol was gone, there was still me. The support systems dropped away one by one. I began drinking heavily again. About a year and a half ago I

began to experience the pain in my side and I knew it was my liver. I had peripheral numbness in my arms. But I was still functioning on the job. One night I realized I was losing the will to live. Everything in me that had made me scrap around and stay alive all these years was gone.

You've been through the program again and seem optimistic that this time you've licked the problem.

My reaction about being here is one of intense relief. My wife has been here and I've really talked to her for the first time in 11 years. I don't dread going home anymore. I'm looking forward to getting out and doing some things. I decided that next year I'm going to hike the Appalachian Trail from beginning to end. My will to live has been regained.

This is the way I want to live. The people I've met here and through AA are the people I prefer to be with. I never again want to lose my fear of alcohol. I have to do something with AA the rest of my life but I feel now I don't have to. I want to.

What is it about the Tri-SARF that made the difference between now and what happened previously?

I think it's the right amount of everything. It is a well balanced program. I trust these people and sense a sincere dedication. These people, many of them, are recovered alcoholics themselves and I'll always establish a link with someone in that situation. I know they are not talking down to me. They've treated me like a human being, with dignity and respect. Most of all, they've given me back responsibility for my life.

Alcohol Glossary

AA (Alcoholics Anonymous)

A worldwide self-help organization in which members help each other recover from alcoholism in a type of group therapy setting that utilizes common experience for mutual support.

Al-Anon

An organization patterned after Alcoholics Anonymous in which *adult* persons who have a significant relationship with an alcoholic help each other.

Al-Ateen

An organization patterned after Alcoholics Anonymous in which *adolescent* persons who have a significant relationship with an alcoholic help each other.

Alcoholism

A disease characterized by the dependence on alcohol and loss of control over one's drinking. It is this nation's number one drug of abuse. Recent estimates indicate that between 12 and 15 Americans suffer from alcoholism.

Alcohol Rehabilitation Center (ARC)

A separate command of the line of the Navy that provides residential rehabilitation within a structured military environment.

Alcohol Rehabilitation Service (ARS)

A clinical service organized within a Naval Regional Medical Center or Naval Hospital that provides residential rehabilitation in a medical environment.

Antabuse

A drug (disulfiram) used as part of an alcohol treatment regimen. It will cause an unpleasant reaction in the presence of alcohol, thereby aiding the recovering alcoholic to resist temptation.

Ascites

A by-product of chronic alcoholism characterized by the accumulation of serous fluid in the abdominal cavity.

Blackouts

A condition characterized by failure of vision, momentary unconsciousness, and loss of memory. A common by-product of chronic alcoholism.

Cirrhosis

The most serious or final stage of liver injury and degeneration. Chronic alcoholism is the most common cause.

Co-Alcoholic

A family member of an alcoholic. Co-alcoholics are both victims of and contributors to the disease.

Counseling and Assistance Center (CAAC)

Navy outpatient units that provide assistance to individuals and their commands in the processing and disposition of personnel with alcohol and drug related problems.

Denial

The attempt by the alcoholic to convince himself and others that he is not a victim of alcoholism. Overcoming denial and admitting that one has lost control of his habit is the first step on the road to recovery.

Drunkenness

A temporary loss of control over one's physical and mental powers caused by excessive alcohol intake.

DWI (Driving while intoxicated)

A frequent legal problem faced by alcoholics.

Enabler

A compulsive friend or family member who aids and abets the alcoholic's addiction by coming to his or her rescue. The enabler denies the alcoholic the opportunity to suffer the consequences of his actions and seek help for the illness.

Ethyl Alcohol (C₂H₅OH)

The common ingredient in alcoholic beverages. It acts as a depressant drug that slows the activity of the brain and spinal cord.

Hangover

The body's reaction to excessive drinking. It may be characterized by gastritis, anxiety, fatigue, and headache.

Intoxication

The state of being poisoned, a condition produced by excessive use of alcohol.

NASAP (Navy Alcohol Safety Action Program)

A Navy educational and awareness program administered under a university contract designed to educate naval personnel to the dangers of alcohol.

Pancreatitis

Acute or chronic inflammation of the pancreas often caused by alcoholism.

Rehabilitation

A structured process whereby a person suffering from alcoholism is restored to effective service.

A Simple Technique for Measurement of Percent Body Fat in Man

LCOL Howell F. Wright, USMCR

Charles O. Dotson, Ph.D.

Paul O. Davis, Ph.D.

In 1973, a research study titled *Estimation of Relative Body Fat and Lean Body Weight in a U.S. Marine Corps Population*, was conducted by Wright and Wilmore.(1) The objective of this study was to develop an accurate, simple technique for estimating total body fat and lean body weight from anthropometric measurements which in turn could be used to predict ideal body weight. The original data were gathered from 297 male Marines randomly selected from the total population of Marines at the Marine Corps Development and Education Command, Quantico, VA.

The anthropometric assessments included nine skinfolds, fifteen circumferences, and nine diameters. Body density was determined using the underwater weighing technique as described by Goldman and Buskirk(2) and relative fat was estimated by the equation of Siri.(3) At the time of the original research, two problematical areas were present. First, the state-of-the-art analysis technique was a form of stepwise multiple linear regression analysis which employed only forward selection of the best measures estimating the parameter being investigated. The second was that the original software package would only accept 35 measures; therefore, Wright and Wilmore were restricted to this number and consequently eliminated 2 of the 37 variables that were actually available. Recent statistical developments indicate that the accuracy of estimating relative fat may be increased by employing nonlinear equations. These facts led one of the original authors (Wright) to believe that the possibility existed for improving the prediction accuracy of the original Wright/Wilmore equations. Consequently, a study was undertaken to re-evaluate the original data, using current statistical theory and expanded software



Dry land weight is taken before immersing subject in the tank.

capability for the purpose of improving existing or creating better equations for predicting percent body fat.

Procedure and Results

The original 1973 research data had been maintained and was available for re-evaluation. Stepwise multiple linear regression procedures were employed in all cases to determine the most accurate equations for estimating percent body fat. The results are reported in Table 1.

The multiple linear regression equation based on the best combination of skinfold, circumference, and diameter measures reproduces the same equation previously derived by Wright and Wilmore (first equation, Table 1). These equations are the same despite the fact that Wright and Wilmore employed the older forward selection technique for determining the best measures

LCOL Wright is Executive Vice President of the Institute of Human Performance in Fairfax, VA 22031. Dr. Dotson is exercise physiologist and statistician at the University of Maryland, College Park, MD 20740. Dr. Davis is Director of the Institute of Human Performance.

estimating percent body fat. In the present study, the stepwise, selection/elimination technique was employed. In the forward selection procedure, the measure exhibiting the highest contribution to the estimation of percent fat independent of measures previously selected is selected next for inclusion in the estimation equation.

The new stepwise analysis procedure selects not only the highest contributor for inclusion in the equation, but reviews measures previously selected for their current contribution to the estimation. It is not uncommon to find measures contributing significantly to the estimation of a dependent variable only to lose its importance after other

TABLE 1. Revised Percent Fat and Lean Body Weight Equations Developed from 1973 Marine Corps Data and Percent Fat Equations (N = 297)

Equation Number	Predicted Variable	Measure	Weight	R	S.E.
1	Fat, %	Chest Skinfold (mm)	0.235	.87	3.08
		Abdomen 2 Circumference (cm)	0.490		
		Neck Circumference (cm)	- 0.581		
		Thigh Skinfold (mm)	0.125		
		Shoulder Circumference (cm)	- 0.202		
		Constant	14.160		
2	Fat, %	Chest Skinfold (mm)	.157	.87	3.08
		Thigh Skinfold (mm)	.113		
		Abdomen Skinfold (mm)	2.067		
		Abdomen 2 Circumference (cm)	.331		
		Neck Circumference (cm)	- .797		
		Constant	- 35.203		
3	Fat, %	Abdomen 2 Circumference (cm)	.740	.81	3.67
		Neck Circumference (cm)	- 1.249		
		Constant	.528		
4	Weight (kg) (kg)	Weight (kg)	1.044	.88	3.49
		Abdomen 2 Circumference (cm)	- .673		
		Constant	40.985		
5	Fat, %	Weight (kg)	- .257	.73	4.48
		Abdomen 2 Circumference (cm)	.854		
		Constant	- 36.464		

TABLE 2. Presentation of Error Inherent in Using Lean Body Weight Equations to Predict Percent Fat

	Lean	Error	Percent Fat	Error
Mean Score	64.996		16.58	
- 1 S.D.	61.506	- 3.49 kg	21.06	+ 4.48%
+ 1 S.D.	68.486	+ 3.49 kg	12.10	- 4.48%

variables have been selected. The present analysis therefore validates the original equation derived by Wright and Wilmore as the most parsimonious equation based on all anthropometric measures useful in estimating percent body fat.

Due to a maximum number limit in the regression program employed by Wright and Wilmore, only 35 of the 37 anthropometric measures available were considered for estimation of percent body fat. In the present study, we were not required to operate under a maximum limit. The second equation reported in Table 1 gives the results of this expanded analysis. The abdomen skinfold measure replaces shoulder circumference from the previous equation as the best equation useful in estimating percent body fat. The validity coefficients for the two equations are, however, identical.

To isolate an equation useful in field situations for estimating percent body fat, only circumference measures were entered into the stepwise analysis. Equation 3 reports the best equation that can be used under field situation restrictions. Only circumference measures at the abdomen and neck need be taken to estimate percent body fat with an $R = .81$ and a standard error of estimate of 3.67 percent. This latter equation yields an increase in the error of estimate of only .59 of one percent over the more involved multivariable equations in Table 1.

Equations 4 and 5 report estimation results for percent fat and lean weight based on body weight and abdomen circumference. Equation 4 was previously derived by Wright and Wilmore and currently is used by the Marine Corps to estimate percent fat of males through the formula:

$$\text{Fat, \%} = \left(1 - \frac{\text{Lean Wt.}}{\text{Total Wt.}}\right) \times 100$$

When an equation is generated to predict percent fat directly by forcing weight (kg) and abdomen 2 circumference (cm), the resulting R value is considerably lowered and the standard error is increased as shown by equation 5.

As equations 4 and 5 clearly reveal, the high validity coefficient reported for estimating lean weight does not hold for estimation of percent fat. The discrepancy arises due to the fact that lean body weight and percent fat are measured in different units of measurement and possess different ranges of scores. The standard error of estimate is expressed as the typical error in estimation that may occur at the average value for the estimated variable. Accordingly, Table 2 shows the effect of plus or minus one standard error in estimating lean weight upon the corresponding percent fat estimate.

The standard error for estimating percent fat directly from a corresponding estimate of lean body weight is ± 4.48 percent. These results point out the problem one encounters when attempting to interpret validity coefficients

resulting from the correlation of two variables. The R coefficient of .88 reported by Wright and Wilmore must be translated to a scale reflecting the units of measurement and range for percent body fat. When this transformation is accomplished, the R coefficient becomes .73. This relatively low R coefficient and high standard error makes the weight and abdomen 2 circumference tables currently being used as a result of the original 1973 research less desirable than the abdomen and neck circumference equation developed in this study. Table 3 is provided for quick determination of percent body fat.

Application of nonlinear regression procedures for the measures reported in Table 1 failed to yield equations significantly improving on the estimation of percent fat over multiple linear equations. This is contrary to the concept presented by other authors who have shown a curvilinear nature to anthropometric measurements. (4, 5) These results, however, apparently reflect the fact that male Marines are more homogeneous in percent fat range and in age.



The subject is instructed to fully exhale underwater. When this task is accomplished, the scale will read between 2 and 6 kg depending upon how much fat the subject has to keep him afloat.



An anthropometer measures body diameter.



A skinfold caliper in use. Here the instrument registers an 8.4 mm iliac crest skinfold.

Abdomen (in.)	13.00	13.25	13.50	13.75	14.00	14.25	Neck (in.)	
25.0	6.3	5.5	4.7	3.9	3.1	2.3	1.5	7
25.5	7.2	6.4	5.6	4.8	4.0	3.3	2.5	1.7
26.0	8.2	7.4	6.6	5.8	5.0	4.2	3.4	2.6
26.5	9.1	8.3	7.5	6.7	5.9	5.1	4.3	3.5
27.0	10.0	9.2	8.4	7.7	6.9	6.1	5.3	4.5
27.5	11.0	10.2	9.4	8.6	7.8	7.0	6.2	5.4
28.0	11.9	11.1	10.3	9.5	8.7	7.9	7.2	6.4
28.5	12.9	12.1	11.3	10.5	9.7	8.9	8.1	7.3
29.0	13.8	13.0	12.2	11.4	10.6	9.8	9.0	8.2
29.5	14.7	13.9	13.1	12.4	11.6	10.8	10.0	9.2
30.0	15.7	14.9	14.1	13.3	12.5	11.7	10.9	10.1
30.5	16.6	15.8	15.0	14.2	13.4	12.6	11.9	11.1
31.0	17.6	16.8	16.0	15.2	14.4	13.6	12.8	12.0
31.5	18.5	17.7	16.9	16.1	15.3	14.5	13.7	12.9
32.0	19.4	18.6	17.8	17.1	16.3	15.5	14.7	13.9
32.5	20.4	19.6	18.8	18.0	17.2	16.4	15.6	14.8
33.0	21.3	20.5	19.7	18.9	18.1	17.3	16.6	15.8
33.5	22.3	21.5	20.7	19.9	19.1	18.3	17.5	16.7
34.0	23.2	22.4	21.6	20.8	20.0	19.2	18.4	17.6
34.5	24.1	23.3	22.5	21.8	21.0	20.2	19.4	18.6
35.0	25.1	24.3	23.5	22.7	21.9	21.1	20.3	19.5
35.5	26.0	25.2	24.4	23.6	22.8	22.0	21.3	20.5
36.0	27.0	26.2	25.4	24.6	23.8	23.0	22.2	21.4
36.5	27.9	27.1	26.3	25.5	24.7	23.9	23.1	22.3
37.0	28.8	28.0	27.2	26.5	25.7	24.9	24.1	23.3
37.5	29.8	29.0	28.2	27.4	26.6	25.8	25.0	24.2
38.0	30.7	29.9	29.1	28.3	27.5	26.7	26.0	25.2
38.5	31.7	30.9	30.1	29.3	28.5	27.7	26.9	26.1
39.0	32.6	31.8	31.0	30.2	29.4	28.6	27.8	27.0
39.5	33.5	32.7	31.9	31.2	30.4	29.6	28.8	28.0
40.0	34.5	33.7	32.9	32.1	31.3	30.5	29.7	28.9
40.5	35.4	34.6	33.8	33.0	32.2	31.4	30.7	29.9
41.0	36.3	35.6	34.8	34.0	33.2	32.4	31.6	30.8
41.5	37.3	36.5	35.7	34.9	34.1	33.3	32.5	31.7
42.0	38.2	37.4	36.6	35.8	35.1	34.3	33.5	32.7
42.5	39.2	38.4	37.6	36.8	36.0	35.2	34.4	33.6
43.0	40.1	39.3	38.5	37.7	36.9	36.1	35.4	34.6
43.5	41.0	40.3	39.5	38.7	37.9	37.1	36.3	35.5
44.0	42.0	41.2	40.4	39.6	38.8	38.0	37.2	36.4
44.5	42.9	42.1	41.3	40.5	39.8	39.0	38.2	37.4
45.0	43.9	43.1	42.3	41.5	40.7	39.9	39.1	38.3
45.5	44.8	44.0	43.2	42.4	41.6	40.8	40.0	39.3
46.0	45.7	45.0	44.2	43.4	42.6	41.8	41.0	40.2
46.5	46.7	45.9	45.1	44.3	43.5	42.7	41.9	41.1
47.0	47.6	46.8	46.0	45.2	44.5	43.7	42.9	42.1
47.5	48.6	47.8	47.0	46.2	45.4	44.6	43.8	43.0
48.0	49.5	48.7	47.9	47.1	46.3	45.5	44.7	44.0
48.5	50.4	49.7	48.9	48.1	47.3	46.5	45.7	44.9
49.0	51.4	50.6	49.8	49.0	48.2	47.4	46.6	45.8
49.5	52.3	51.5	50.7	49.9	49.2	48.4	47.6	46.8
50.0	53.3	52.5	51.7	50.9	50.1	49.3	48.5	47.7

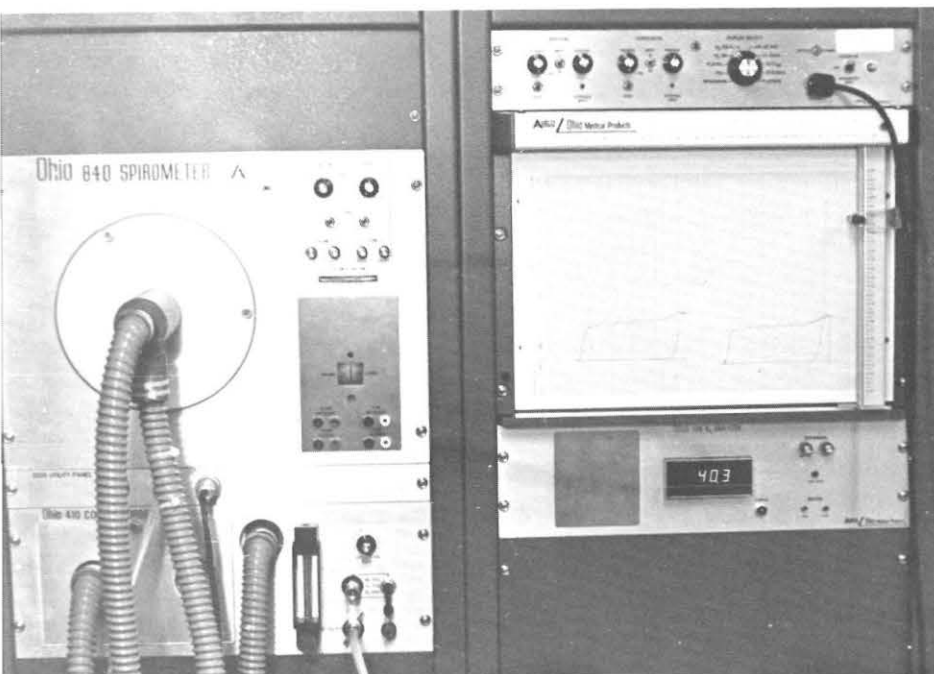
On the basis of the present study, it can be concluded that the best equation for measurement of percent body fat of men in a field situation is one utilizing abdomen 2 circumference and neck circumference. It should also be realized that considerable error can be expected if one uses a lean body mass equation to predict, through a transformation procedure, percent body fat.

References

1. Wright FH, Wilmore JH: Estimation of relative body fat and lean body weight in a United States Marine Corps population. *Aerospace Med* 45:301-306, 1974.
2. Goldman RF, Buskirk ER: Body volume measurements by underwater weighing: Description of a method, in Brozek J, Henschel A (eds): *Techniques for Measuring Body Composition*. Washington DC, National Academy of Science, 1961.
3. Siri WE: *Body Composition from Fluid Spaces and Density*. Berkeley, Donner Lab Med Physics, University of California Report, 1956.
4. Durnin JVGA, Womersley J: Body fat assessed from total body density and its estimation from skinfold thickness: Measurements on 481 men and women aged from 16 to 72 years. *J Nutr* 32:77-97, 1974.
5. Jackson AS, Pollock ML, Ward A: Generalized equations for the prediction of body composition, abstracted. *Med Sci Sports* 10:47, 1978. □

**TABLE 3. Percent Fat Prediction in Males
from Abdomen and Neck Circumference**

											Neck (in.)							
15.25	15.50	15.75	16.00	16.25	16.50	16.75	17.00	17.25	17.50	17.75	18.00	18.25	18.50	18.75	19.00	19.25	19.50	19.75
.1																		
1.0	.2																	
2.0	1.2	.4																
2.9	2.1	1.3																
3.8	3.0	2.3	1.5															
4.8	4.0	3.2	2.4	1.6	.8	0												
5.7	4.9	4.1	3.3	2.5	1.8	1.0	.2											
6.7	5.9	5.1	4.3	3.5	2.7	1.9	1.1	.3										
7.6	6.8	6.0	5.2	4.4	3.6	2.8	2.0	1.3	.5									
8.5	7.7	6.9	6.2	5.4	4.6	3.8	3.0	2.2	1.4	.6								
9.5	8.7	7.9	7.1	6.3	5.5	4.7	3.9	3.1	2.3	1.5	.8							
10.4	9.6	8.8	8.0	7.2	6.5	5.7	4.9	4.1	3.3	2.5	1.7	.9	.1					
11.4	10.6	9.8	9.0	8.2	7.4	6.6	5.8	5.0	4.2	3.4	2.6	1.8	1.0	.3				
12.3	11.5	10.7	9.9	9.1	8.3	7.5	6.7	6.0	5.2	4.4	3.6	2.8	2.0	1.2	.4			
13.2	12.4	11.6	10.9	10.1	9.3	8.5	7.7	6.9	6.1	5.3	4.5	3.7	2.9	2.1	1.3	.5		
14.2	13.4	12.6	11.8	11.0	10.2	9.4	8.6	7.8	7.0	6.2	5.5	4.7	3.9	3.1	2.3	1.5	.7	
15.1	14.3	13.5	12.7	11.9	11.1	10.4	9.6	8.8	8.0	7.2	6.4	5.6	4.8	4.0	3.2	2.4	1.6	.8
16.1	15.3	14.5	13.7	12.9	12.1	11.3	10.5	9.7	8.9	8.1	7.3	6.5	5.7	5.0	4.2	3.4	2.6	1.8
17.0	16.2	15.4	14.6	13.8	13.0	12.2	11.4	10.6	9.9	9.1	8.3	7.5	6.7	5.9	5.1	4.3	3.5	2.7
17.9	17.1	16.3	15.6	14.8	14.0	13.2	12.4	11.6	10.8	10.0	9.2	8.4	7.6	6.8	6.0	5.2	4.5	3.7
18.9	18.1	17.3	16.5	15.7	14.9	14.1	13.3	12.5	11.7	10.9	10.1	9.4	8.6	7.8	7.0	6.2	5.4	4.6
19.8	19.0	18.2	17.4	16.6	15.8	15.1	14.3	13.5	12.7	11.9	11.1	10.3	9.5	8.7	7.9	7.1	6.3	5.5
20.8	20.0	19.2	18.4	17.6	16.8	16.0	15.2	14.4	13.6	12.8	12.0	11.2	10.4	9.6	8.9	8.1	7.3	6.5
21.7	20.9	20.1	19.3	18.5	17.7	16.9	16.1	15.3	14.6	13.8	13.0	12.2	11.4	10.6	9.8	9.0	8.2	7.4
22.6	21.8	21.0	20.3	19.5	18.7	17.9	17.1	16.3	15.5	14.7	13.9	13.1	12.3	11.5	10.7	9.9	9.2	8.4
23.6	22.8	22.0	21.2	20.4	19.6	18.8	18.0	17.2	16.4	15.6	14.8	14.1	13.3	12.5	11.7	10.9	10.1	9.3
24.5	23.7	22.9	22.1	21.3	20.5	19.8	19.0	18.2	17.4	16.6	15.8	15.0	14.2	13.4	12.6	11.8	11.0	10.2
25.5	24.7	23.9	23.1	22.3	21.5	20.7	19.9	19.1	18.3	17.5	16.7	15.9	15.1	14.3	13.6	12.8	12.0	11.2
26.4	25.6	24.8	24.0	23.2	22.4	21.6	20.8	20.0	19.3	18.5	17.7	16.9	16.1	15.3	14.5	13.7	12.9	12.1
27.3	26.5	25.7	25.0	24.2	23.4	22.6	21.8	21.0	20.2	19.4	18.6	17.8	17.0	16.2	15.4	14.6	13.8	13.1
28.3	27.5	26.7	25.9	25.1	24.3	23.5	22.7	21.9	21.1	20.3	19.5	18.8	18.0	17.2	16.4	15.6	14.8	14.0
29.2	28.4	27.6	26.8	26.0	25.2	24.5	23.7	22.9	22.1	21.3	20.5	19.7	18.9	18.1	17.3	16.5	15.7	14.9
30.2	29.4	28.6	27.8	27.0	26.2	25.4	24.6	23.8	23.0	22.2	21.4	20.6	19.8	19.0	18.3	17.5	16.7	15.9
31.1	30.3	29.5	28.7	27.9	27.1	26.3	25.5	24.7	24.0	23.2	22.4	21.6	20.8	20.0	19.2	18.4	17.6	16.8
32.0	31.2	30.4	29.7	28.9	28.1	27.3	26.5	25.7	24.9	24.1	23.3	22.5	21.7	20.9	20.1	19.3	18.5	17.8
33.0	32.2	31.4	30.6	29.8	29.0	28.2	27.4	26.6	25.8	25.0	24.2	23.5	22.7	21.9	21.1	20.3	19.5	18.7
33.9	33.1	32.3	31.5	30.7	29.9	29.2	28.4	27.6	26.8	26.0	25.2	24.4	23.6	22.8	22.0	21.2	20.4	19.6
34.9	34.1	33.3	32.5	31.7	30.9	30.1	29.3	28.5	27.7	26.9	26.1	25.3	24.5	23.7	23.0	22.2	21.4	20.6
35.8	35.0	34.2	33.4	32.6	31.8	31.0	30.2	29.4	28.7	27.9	27.1	26.3	25.5	24.7	23.9	23.1	22.3	21.5
36.7	35.9	35.1	34.4	33.6	32.8	32.0	31.2	30.4	29.6	28.8	28.0	27.2	26.4	25.6	24.8	24.0	23.2	22.5
37.7	36.9	36.1	35.3	34.5	33.7	32.9	32.1	31.3	30.5	29.7	28.9	28.2	27.4	26.6	25.8	25.0	24.2	23.4
38.6	37.8	37.0	36.2	35.4	34.6	33.9	33.1	32.3	31.5	30.7	29.9	29.1	28.3	27.5	26.7	25.9	25.1	24.3
39.5	38.8	38.0	37.2	36.4	35.6	34.8	34.0	33.2	32.4	31.6	30.8	30.0	29.2	28.4	27.7	26.9	26.1	25.3
40.5	39.7	38.9	38.1	37.3	36.5	35.7	34.9	34.1	33.4	32.6	31.8	31.0	30.2	29.4	28.6	27.8	27.0	26.2
41.4	40.6	39.8	39.0	38.3	37.5	36.7	35.9	35.1	34.3	33.5	32.7	31.9	31.1	30.3	29.5	28.7	27.9	27.2
42.4	41.6	40.8	40.0	39.2	38.4	37.6	36.8	36.0	35.2	34.4	33.6	32.9	32.1	31.3	30.5	29.7	28.9	28.1
43.3	42.5	41.7	40.9	40.1	39.3	38.5	37.8	37.0	36.2	35.4	34.6	33.8	33.0	32.2	31.4	30.6	29.8	29.0
44.2	43.5	42.7	41.9	41.1	40.3	39.5	38.7	37.9	37.1	36.3	35.5	34.7	33.9	33.1	32.4	31.6	30.8	30.0
45.2	44.4	43.6	42.8	42.0	41.2	40.4	39.6	38.8	38.1	37.3	36.5	35.7	34.9	34.1	33.3	32.5	31.7	30.9
46.1	45.3	44.5	43.7	43.0	42.2	41.4	40.6	39.8	39.0	38.2	37.4	36.6	35.8	35.0	34.2	33.4	32.6	31.9



Pulmonary function instrument determines quantity of residual air trapped in the lungs after full exhalation. This buoyancy factor is subtracted from underwater weight before determining density.

To sBe Or Not To sBe (That is the Question!)

CAPT Roger E. Alexander, DC, USN
George W. Dennish, MD

Infective endocarditis, an all-inclusive term which encompasses the condition known as subacute bacterial endocarditis (SBE), is a serious disease with significant mortality. Because of its implications, there has been profound concern for the management of susceptible patients undergoing dental treatment. This concern has led the American Heart Association (AHA) and the American Dental Association (ADA) to modify periodically the recommended antibiotic regimens for these patients.

Unfortunately, controversies, shifting philosophies, and changing recommendations have created a climate of confusion, abuse, and even noncompliance in some dental and medical offices. This situation is made more complex by a concern over potential litigation on the one hand, and uncertainty as to the efficacy of the recommended regimens on the other since they are based on subjective considerations and animal data, and not controlled human studies. (1,8,12)

It is our intent to clarify some of the confusion surrounding SBE prophylaxis and to provide practical clinical guidelines for managing dental patients who may be susceptible.

Rheumatic Fever. Rheumatic fever (RF) is an acute, nonsuppurative, systemic inflammatory disease which follows (2-3 weeks after) a Group A, beta hemolytic streptococcal pharyngitis, in a small percentage of patients. It usually occurs between the ages of 5 and 18, and rarely before or thereafter. The exact pathogenesis is poorly understood, but is felt to have an immunologic basis. The disease is characterized by fever; a self-limiting, migratory polyarthritides; chorea; an external rash over the trunk, abdomen, head (erythema marginatum);

and/or a carditis which may result in permanent valvular damage. (11) Physicians are reportedly seeing fewer cases in recent years (13) but it is not known whether this is due to more aggressive antibiotic therapy or to more sophisticated diagnoses. RF can be difficult to diagnose and is often mistaken for other diseases.

Scarlet fever is caused by a similar (erythrogenic-toxin-producing) microorganism, and is frequently placed in the same category of concern. It should *not* carry the same implication since the incidence of carditis is markedly less than with RF.

Rheumatic Heart Disease. According to AHA statistics, nearly two million Americans have rheumatic heart disease (RHD). There is a tendency for many doctors to associate RF with RHD, automatically, but one does not necessarily follow the other. In this era of antibiotics, RF can occur without RHD; likewise, valvular damage can be found without a positive history of RF. (8) Earlier studies documented that 63.6 percent of RF patients developed RHD, (11) but with the advent of more sophisticated diagnoses and effective antibiotic therapy, the incidence of carditis is lower today. (13) RF patients who don't develop carditis seldom get valvular damage. If there is no evidence of valvular damage, it is less likely that they will get RHD later *if* recurrences of RF can be prevented during the first few years after the initial infection. (9,10) For this reason, some post-RF patients are given ongoing maintenance regimens with oral penicillin or benzathine penicillin injections. (11) These regimens are maintenance in nature and therefore *inadequate* as prophylaxis regimens for dental treatment.

In a study by Feinstein *et al.*, as reported by Noonan, (9) out of 181 patients who lacked detectable murmurs during their RF episodes none developed subsequent RHD; of 188 patients with detectable murmurs (indicative of valvulitis) 71 percent developed RHD.

The most common RHD lesion is a proliferative, granulomatous reaction resulting in mitral stenosis and/

Dr. Alexander is Head, Oral and Maxillofacial Surgery Department, MCRD Branch Dental Clinic, NRMCC San Diego, CA 92136.

Dr. Dennish, formerly with the Cardiology Service at NRMCC San Diego, CA, is now in private practice at Scripps Memorial Hospital, La Jolla and Encinitas, CA.

or insufficiency. Aortic valvular involvement is the second most common lesion. The disease process doesn't simply include valves, however. The entire myocardium can become involved. Once the valve surfaces have been altered, flow characteristics change and those sites become susceptible nidi for subsequent growths from blood-borne organisms (i.e., infective endocarditis).

Congenital Heart Disease. Certain structural abnormalities of the heart, present from birth, can create an "environment" for the development of microbial colonies, not unlike the scarring secondary to RHD. The incidence of congenital heart disease (CHD) is estimated at 8 per 1,000 births. (13) Among the CHD conditions of particular concern are ventricular septal defects and patent ductus arteriosus, as well as coarctation of the aorta, tetralogy of Fallot, aortic and pulmonary stenosis, atrial septal defects, and complex cyanotic heart disease. Cardiologists feel that certain repaired CHD defects (e.g., patent ductus and atrial septal defects, etc.) do not mandate prophylaxis after six months, unless residual murmurs are noted clinically, or prosthetic patches are used. (4,6) An exception to the rule is coarctation of the aorta.

Bacterial Endocarditis. Normal heart valves tend to become involved with acute bacterial endocarditis (ABE), usually from staphylococcal or pneumococcal organisms, whereas RHD/CHD-deformed valves are predisposed to SBE. The basic lesion is a vegetation of fibrin "mesh," with entrapped blood elements (e.g., platelets) and bacteria. The mesh tends to shield the organisms from the host defense mechanism, and the infection itself tends to depress the normal host reaction. (10) The surrounding tissues become inflamed and the involvement can extend to the chordae and even to the myocardium. The valvular damage can be so life-threatening as to require immediate surgery for removal of the valve.

With treatment, mortality rates are reportedly between 17 percent and 65 percent, according to two compilations. (2,10) Left untreated, the disease is consistently fatal. In the subacute form, colonization is normally by organisms of low pathogenicity (bacteria, yeast, fungi, or even rickettsia), whereas the acute form, the organisms tend to be extremely virulent. (13)

Between 46 percent and 80 percent of SBE patients will give histories of previous RHD. (7) In one study, only 10 percent had any history of prior dental care and 36.7 percent had no previously diagnosed heart disease. (2) In at least two studies there was a predominance of males (77.6 percent) and caucasians (96 percent) involved. (2,7)

Etiologic organisms have changing profiles. Although a high percentage of SBE cases are caused by *Streptococcus viridans*, in recent years there has been increased involvement by yeast, fungi, and gram negative bacteria. (7,11) Drug abusers have a high rate of involve-

ment with resistant staphylococcus strains. (7)

Onset of the disease is gradual, with an irregular, low-grade fever and audible heart murmur being cardinal diagnostic signs and symptoms. Chills, sore throat, weight loss, fatigue, malaise, arthralgia, and/or petichial hemorrhages may also be present. Blood cultures (5 over a 24-hour period) (10) are usually positive if taken correctly, but may be negative.

Cardiovascular Prostheses. Patients who have undergone extensive surgery for placement of cardiovascular prostheses (major vessel grafts, heart valves, etc.) appear to be at significantly higher risk to develop endocarditis at the suture sites, than other patients. The infections tend to involve gram negative organisms 20 percent of the time. (10) The implications of such infections are immense because of the possibility that removal of the prostheses may be necessary. Furthermore, the infected adjacent tissues may not support a replacement prosthesis. Obviously, the prognosis in such a situation is ominous. For that reason, a more aggressive prophylactic regimen has been generated, hitting a broader spectrum of microorganisms (Regimen B).

Bacteremia from Dental Treatment. Since valves that have been involved with RHD/CHD are susceptible to reinfection via a bacteremia from dental manipulations, great concern has been voiced over dental treatment. Although many articles have debated this cause-effect relationship since the early 1900s, the pathogenesis is still far from clear. There does not appear to be a totally reliable way of predicting which patients with structural heart disease will experience valvular infection, nor the specific causal events that will initiate it. Bacteremia has not only been documented secondary to dental treatment, but also following everyday functional occurrences, such as chewing, brushing, and flossing. (1) Dentally speaking, bacteria most commonly implicated are staphylococci, beta hemolytic streptococci, and bacteroides. (2)

Clinicians have questioned the wisdom of repeated antibiotic exposures, since 46 percent of the oral organisms in one study, and 69.5 percent in another, were shown to be resistant to penicillin. (2,7) The AHA has recently reported more than 30 cases where "SBE Prophylaxis" failed, and presently has a retrospective evaluation and registration program in effect to evaluate the problem. (14)

The History. The patient history on which most dental practitioners base their RHD evaluations is the most unreliable index of all! Patients may think they have had RHD/CHD because "it sounds familiar," (10) or their physician thought a long febrile illness might be RF, or perhaps another member of the family had had the disease. In one study, only 24.3 percent of CHD/RHD patients knew they required antibiotic coverage. (4,8) Without positive documentation, a patient's word that he

or she had RF with RHD involvement is often an insufficient foundation on which to base a decision for a lifetime commitment to prophylactic antibiotic therapy. Nevertheless, some clinicians persist in advocating "blanket" premedication for all patients with only a vague RF history, and confusion reigns supreme.

The "Need" for SBE Prophylaxis. Although the topic is controversial,⁽⁶⁾ the AHA and most contemporary cardiologists feel that even if a patient has had RF or scarlet fever, antibiotic SBE prophylaxis for dental treatment is not necessary unless there is documented history of RHD or current clinical evidence of a residual murmur (valvular damage).^(4,5,9,10) Because the prophylactic regimens have not been proven in humans, because of the potential side effects of repeated antibiotic usage, and because of the rapid emergence of resistant strains (in as little as 24 hours), there has been a shift toward relative conservatism. The tendency toward overkill remains, however, because of the serious consequences and professional accountability in the courts.⁽¹⁾

The demonstration of resistant strains emerging within 24 hours⁽³⁾ led to cardiologists and infectious disease specialists recently devising a revised approach to antibiotic prophylaxis.⁽¹²⁾ Members of the AHA committee that dealt with the problem note that the duration of the current regimen is so short that emergence of resistant strains is unlikely.⁽⁵⁾ If longer courses of therapy or repeated usages are required, appointments should be made at least one week apart or the antibiotic should be alternated (penicillin, then erythromycin, then penicillin, etc.).⁽⁵⁾ Timing of the prophylaxis dose is probably more critical, since the resultant bacteremias have been shown to occur only in the first 15 minutes.^(5,10) Dental officers should make special efforts to formulate a comprehensive treatment plan at the inception of treatment and coordinate the treatment with all involved parties, so that a maximum amount of work can be accomplished in a short time and with very few appointments. In these patients, modalities like "quadrant dentistry" are not only time-efficient but therapeutic.

Who Gets Covered? In accordance with published guidelines⁽¹²⁾ the following patient must be premedicated with appropriate antibiotics before all dental procedures likely to cause gingival or pulpal bleeding (including dental cleanings):

- Patients with a history of rheumatic heart disease, or rheumatic fever and clinically evident valvular damage (i.e., present murmur).
- Patients with documented congenital heart disease (see discussion above).
- Patients with documented idiopathic hypertrophic subaortic stenosis or Barlow's Syndrome (prolapsed mitral valve) (Note: Incidence of SBE has been very low in the latter, and the need is controversial—the manag-

ing physician should provide guidance as to need).

- Patients with prosthetic heart valves, major vessel grafts, or other cardiovascular devices.
- Possible need: Patients with indwelling vascular catheters, transvenous pacemakers, patients with shunts, etc.—implementation at the discretion of the consulting physician.

Children shedding deciduous teeth, minor noninvasive procedures such as adjustment of orthodontic bands, etc., and procedures that do not produce invasion of soft tissues do not require prophylaxis, even in susceptible patients. Coronary bypass patients, adults or children with functional flow murmurs, and patients without demonstrable post-RHD murmurs but having tenuous history of RF do not require premedication with antibiotics without cause.

Evaluating the Need. Patients with CHD, cardiovascular prostheses and other serious heart conditions will normally have well-documented histories, complete medical charts, and will be well briefed on their condition. The patients that will pose clinical dilemmas are those with very nebulous histories of rheumatic fever and/or heart murmur. It is this latter group of patients that will be the focus of our attention.

Initial probing by the dental officer should ascertain whether the patient is relating a primary, secondary, or tertiary history, i.e., "I remember . . ." vs "My mother told me that . . ." vs "My mother told me she remembers the doctor thought . . ." Historical detail should be probed in depth.

- Was the patient ever bedridden or hospitalized for RF/RHD?
- Was the patient ever restricted from sports?
- Did the patient ever receive antibiotics on a regular basis over a long period of time?
- Was the patient specifically advised that he/she had a heart murmur?
- Was a murmur detected during the induction physical examination for active duty?
- Was the patient sent to a consulting medical specialist for further evaluation?

If the answers to these questions lend credibility to a history of RHD, then the patient's medical records should be obtained and perused. Every active duty patient undergoes a physical examination at the time of induction and those records are generally available from the local dispensary or medical department facility.

If the history to this point is suspicious, and medical records are either not available or not helpful, then consultation with the patient's managing physician or a military medical referral center is indicated before instituting dental treatment. This written consultation (SF

513) should indicate the positive nature of the history obtained. Request an opinion as to whether this patient will require SBE antibiotic prophylaxis before future dental appointments, in accordance with AHA guidelines. The written reply containing examination findings (murmur, etc.) and the recommendations should be inserted into the dental record for future reference.

If the referring dental officer notes an apparent contradiction in the advisory (e.g., a prophylaxis recommendation in the absence of demonstrable murmur), he/she shouldn't feel reluctant to contact the consulted clinic and seek clarification regarding the recommendation. In the past, the senior author has encountered physician's assistants and physicians who were unaware of the current philosophies within the cardiology and infectious disease specialties. After discussion and further investigation, the recommendations for prophylaxis were subsequently modified. If the consulted physician feels that there are grounds for antibiotic coverage, then that opinion should be followed.

The Antibiotic Arsenal. Based on the microbial population most commonly associated with dental bacteremias and despite years of abuse, penicillin remains the antibiotic of choice in nonallergic patients. Although the parenteral route is preferred over the oral route, the latter is generally more favored by both the patient and the dentist. The subject of oral coverage is controversial, but the consensus seems to be that the oral route can be used without concern in reliable patients. In patients with a documented or suspected history of penicillin allergy, erythromycin becomes the favored drug, although some experts question its efficacy because of demonstrated resistance by common organisms.⁽¹⁰⁾ Tetracycline, cephalosporins, and clindamycin are not approved drugs for SBE prophylaxis use, unless laboratory studies specifically indicate their necessity. Regimen B advocates usage of parenteral penicillin plus streptomycin. Many cardiologists believe that ampicillin and gentamycin are preferable to that combination, despite the AHA's failure to recognize that treatment program.⁽⁸⁾ For patients allergic to penicillin, Regimen B utilizes vancomycin based on the organisms commonly encountered.

The Current AHA Regimen. The latest SBE prophylaxis regimen from the American Heart Association (Table 1) features higher dosages of all drugs, given over a shorter time period, in order to minimize resistant strain emergence and cope with newer strains that have already developed. The recommendations are general in nature and not intended to cover all situations that may arise clinically. Duration and dosage of antibiotics must also take into consideration such factors as host resistance, clinical situations (e.g., abscess I&D), patient's oral hygiene status (filthy vs clean), etc. Close rapport between medical and dental officers is manda-

TABLE 1. Current AHA/ADA SBE Prophylaxis Regimens (12)

Regimen A. For All Susceptible Patients (Except Prosthetic Valve Patients) and Patients on Continuing Doses of Maintenance Penicillin

Adults and Children Over 60 Lbs.

Penicillin V, 2 gms orally 30-60 minutes preop, then 500 mg Q 6 h X 8 doses

(or)

Aqueous (Crystalline) Penicillin G, 1 million units IM, plus Procaine Penicillin G, 600,000 units IM—both given 30-60 minutes preop, then Penicillin V 500 mg Q 6 h X 8 doses

Children Under 60 Lbs.

Penicillin V, 1 mg 30-60 minutes preop, then 250 mg Q 6 h X 8 doses

(or)

Aqueous Penicillin G, 30,000 units per kg(BW) IM, plus Procaine Penicillin G, 600,000 units IM—both given 30-60 minutes preop, then Penicillin V, 250 mg Q 6 h X 8 doses

Alternate Regimen A: For Patients Allergic to Penicillin or Requiring Alternate Drugs

Adults and Children Over 60 Lbs.

Erythromycin, 1 mg orally 1½-2 hours preop, then 500 mg Q 6 h X 8 doses

Children Under 60 Lbs.

Erythromycin, 20 mg/kg(BW) orally 1½-2 hours preop, then 10 mg/kg(BW) Q 6 h orally X 8 doses

Regimen B: For All Patients with Prosthetic Heart Valves, Grafts, and Patients on Continuing Doses of Penicillin, for Whom Erythromycin is Not Indicated

Adults and Children Over 60 Lbs.

Aqueous (Crystalline) Penicillin G, 1 million units IM, plus Procaine Penicillin G, 600,000 units IM, plus Streptomycin, 1 gm IM—all given 30-60 minutes preop, then Penicillin V, 500 mg Q 6 h X 8 doses

(or)

(Some cardiologists prefer an alternate regimen, using Ampicillin and/or Gentamycin—see text)

Children Under 60 Lbs.

Aqueous Penicillin G, 30,000 units per kg(BW) IM plus Procaine Penicillin G, 600,000 units IM plus Streptomycin, 20 mg/kg(BW) IM, given 30-60 minutes preop, then Penicillin V, 250 mg Q 6 h X 8 doses

Alternate Regimen B: For Patients Allergic to Penicillin and/or Streptomycin

Adults and Children Over 60 Lbs.

Vancomycin, 1 gm IV over 30-60 minute period before procedure(s), then Erythromycin, 500 mg orally Q 6 h X 8 Doses

Children Under 60 Lbs.

Vancomycin, 20 mg/kg(BW) IV over 30-60 minute period prior to procedures, then Erythromycin, 10 mg/kg(BW) Q 6 h X 8 doses (NOTE: Vancomycin dosage not to exceed 44 mg/kg/24-hour period)

tory for maximum patient benefit. (5) It must also be remembered that infective endocarditis can occur in patients receiving the recommended regimen. (12) Therefore, these regimens must go hand in hand with close clinical observation and followup. Again, it is emphasized that the majority of specialists feel that patients with RF history alone and no demonstrable clinical murmur do not require SBE prophylaxis.

Despite over 60 years of animal studies, professional consideration, and debate, medical specialists are still struggling to clarify the problems connected with infective endocarditis, especially in the area of prevention and dental treatment. Changing protocols and shifting philosophies have led to confusion in the dental profession as to what patients require antibiotic premedication for the prevention of SBE subsequent to dental treatment. This paper has explored the various facets of the problem and outlined a rational clinical approach to patients who indicate on their histories that they have a history of rheumatic fever, rheumatic heart disease, congenital heart disease, or cardiovascular prostheses. This approach is then integrated with the current prophylaxis recommendations of the American Heart Association.

References

1. Bornfield M: Letter to the editor. *JADA* 96:27, January 1978.
2. Falace V, Ferguson T: Bacterial endocarditis. *Oral Surg* 42:189, 1976.
3. Garrod L, Waterworth P: The risks of dental extraction during penicillin treatment. *Br Heart J* 24:39, January 1962.
4. Glasser S: The problems of patients with cardiovascular disease undergoing dental treatment. *JADA* 94:1158, June 1977.
5. Kaplan E, Durack D: Letter to the editor. *JADA* 96:28, January 1978.
6. Millard H: Preventive measures for bacterial endocarditis (questions and answers). *JADA* 89:527, September 1974.
7. Mostaghim D, Millard H: Bacterial endocarditis: A retrospective study. *Oral Surg* 40:219, August 1975.
8. Neu H: Endocarditis: The problems remain and multiply. *Infection* 7(2):52, 1979.
9. Noonan J: Natural history of rheumatic heart disease in adolescents. *Postgrad Med* 56:107, November 1974.
10. Panky G: The prevention and treatment of bacterial endocarditis. *Am Heart J* 98:102, July 1979.
11. Tarsitano J, O'Hara J Jr: Rheumatic fever: In depth appraisal with a discussion of penicillin. *JADA* 77:1074, November 1968.
12. Prevention of bacterial endocarditis, Committee Report of the American Heart Association. *JADA* 95:600, September 1977.
13. *The Merck Manual of Diagnosis & Therapy*, ed 13. Merck Sharp & Dohme Research Laboratories, 1977.
14. Antibiotic failures sought. *ADA News*, March 17, 1980. □

Maintaining Competent Surgical Support

Continuing education and training are necessary for optimum performance in many highly technical jobs. Carrier qualified pilots are required to have made a night landing within the preceeding week to be fully qualified.* They usually fly many times each week. In addition, fliers often talk shop at meal-time, in the wardroom, etc.; the same as physicians do. Reserve military personnel who had satisfactory proficiency in a military skill during their active duty years, and who drill regularly, usually require three months of intensive additional training to bring their military skills to a satisfactory level. Physicians also learn and maintain their skills best by daily practice in an environment of teaching conferences, professional consultations, and informal discussions among their peers. The availability of a good

medical library is likewise important. Many State medical societies require continuing education for licensure, and many of the medical specialty boards require periodic formal reexamination to assure competence.

Certain ships at sea and isolated land bases require the presence of a fully trained surgeon. A surgeon is needed for the occasional emergency—vehicle accident, explosion, fire, or of course actual war, but their day to day level of professional activity *usually* is quite low—not enough to maintain competence for any more than a few months at a time.

At these isolated facilities there is little organized educational activity, the reference library is barely adequate at best, and physician to physician stimulation by discussion, argument, etc., is much less than at a teaching hospital.

In short, while the line people are continually training, practicing,

and drilling to maintain their skills, the medical officers in an isolated post are *not* (and cannot). The quality of emergency surgical care may be less than optimal, physician morale will decline, and retention of desirable medical officers be more difficult.

Recommendations

Top quality surgical skills may be needed quickly although infrequently at many isolated military installations. It is difficult for a medical officer, particularly a surgeon, to maintain his skills in this type environment. Assignment to these isolated billets should be for three months or less and the physician's other assignment should be to a naval regional medical center, preferably one with a teaching program. Financial or educational incentives would help fill these billets with qualified volunteers.

—CAPT Robert L. Glass, MC, USNR, Department of Surgery, NNMC Bethesda, MD 20014.

*NATOPS Manual, Landing Signal Officer, 15 Nov 1975

Notes & Announcements

IN MEMORIAM

CAPT *Thomas E. Bollinger*, DC, USN, former oral surgeon, died 22 Feb 1981 as a result of a skiing accident.

Born 16 Nov 1938 in Omaha, NE, CAPT Bollinger received his D.D.S. from the University of Nebraska in 1963.

CAPT Bollinger was commissioned a lieutenant in the U.S. Navy Dental Corps on 1 June 1963 and was promoted to captain on 19 June 1979. His duty assignments included Naval Administrative Command, Naval Training Center, Great Lakes, IL; Naval Air Station, Agana, Guam; Naval Support Activity, DaNang, Vietnam; USS *Dixie* (AD-14); NRMC Great Lakes, IL; and USS *Enterprise* (CVN-65).

CAPT Bollinger served as a staff member of the Dental Service at NRMC Oakland, CA, from May 1979 until the time of his death.

LT *John J. Treszka*, DC, USNR, died 6 April 1981 in El Toro, CA.

Born 11 Aug 1949 in Chicago, IL, LT Treszka received his B.S. degree from the University of Texas at El Paso in 1972, an M.S. from the University of New Mexico in 1975, and a D.M.D. from Tufts University School of Dental Medicine, Boston, MA, in 1979.

LT Treszka was commissioned a lieutenant in the U.S. Navy Dental Corps on 2 Oct 1980 and was stationed with the 13th Dental Company, 1st Dental Battalion, 1st Force Service Support Group, FMF, El Toro, until the time of his death.

CONSTRUCTION OF NAVY MEMORIAL

Recently, a resolution was signed by the Chairman of the Board of Directors of the Pennsylvania Avenue Development Corporation approving construction of a memorial in Market Square Park, on Pennsylvania Avenue between 7th and 9th Streets in Washington, DC, to honor those who have served the United States Navy.

The U.S. Navy Memorial Foundation's proposal for the memorial features an amphitheater and stage that will become a permanent performance home for the Navy Band, provide facilities for other concert organizations (both military and civilian), and a water park designed to stimulate street life and make Market Square a center for public activities.

The idea of creating a Navy memorial dedicated not only to the historic but to the continuing contributions and sacrifices made by Navy personnel and Navy civilians to our country's welfare has been discussed for many years. The project moved beyond the idea stage in

1977 when the U.S. Navy Memorial Foundation was incorporated as a nonprofit educational association.

The approval is subject to the following conditions:

- The Foundation must schedule the programming, funding, and approvals for the Navy Memorial in coordination with and without delaying the Corporation's schedule for design and construction of Market Square.
- The design of both the Navy Memorial and Market Square will be produced by a consultant selected jointly by the Foundation and the Corporation in accordance with the Corporation's Architect/Engineer selection procedures. Design of the Navy Memorial shall satisfy the design criteria for Market Square prepared by the Corporation in consultation with the Foundation.
- The Foundation must furnish the Corporation with evidence and guarantees of sufficient funds for design of the Navy Memorial, at such time as design of Market Square and the Navy Memorial begins, and for completion of construction at such time as construction documents for Market Square and the Navy Memorial are 65 percent complete.

DIVING CASUALTY COURSE

A course entitled Recognition and Treatment of Diving Casualties will be held 31 Aug 1981—4 Sept 1981 at the Naval Diving and Salvage Training Center, Panama City, FL.

The course is for physicians interested in learning to recognize and treat basic diving casualties. The course would be beneficial to a physician with duty at a facility engaged in diving operations without the full-time availability of an undersea trained, diving medical officer.

The program is accredited through the Undersea Medical Society for 29-30 CME credit hours. The course must be approved and funded by the physician's command.

For further information, write or call: Dr. William Cunningham, Undersea Medical Officer, Naval Diving and Salvage Training Center, Panama City, FL 32407. Telephone: (904) 234-4651.

NACAP KITS AVAILABLE

NaCAP (Navy Clearing the Air Program) kits for helping smokers quit smoking are available in limited quantities. The kits contain informational booklets on smoking and health, audiovisual and print materials catalogue, brochures, self-help kits, "how-to" booklets, decals, buttons, etc.

Any command wishing to obtain NaCAP kits should send their request to: CAPT D.F. Hoeffer, MC, USN, Bureau of Medicine and Surgery (MED 03B), Department of the Navy, Washington, DC 20372.

U.S. NAVAL PUBLICATIONS and FORMS CENTER
ATTN: CODE 306
5801 Tabor Avenue
Philadelphia, Pa. 19120
Official Business

POSTAGE AND FEES PAID
DEPARTMENT OF THE NAVY
DoD-316



CONTROLLED CIRCULATION RATE

Enter my subscription to U.S. NAVY MEDICINE.—\$12.00 domestic mailing—\$15.00 foreign mailing. (Subscription rates include postage and handling costs. Make checks payable to Superintendent of Documents.)

Send Subscription to:

NAME—FIRST, LAST		
COMPANY NAME OR ADDITIONAL ADDRESS LINE		
STREET ADDRESS		
CITY	STATE	ZIP CODE

MAIL SUBSCRIPTION FORM TO:
Assistant Public Printer
(Superintendent of Documents)
Government Printing Office
Washington, DC 20402

PLEASE PRINT

U.S. NAVY MEDICINE